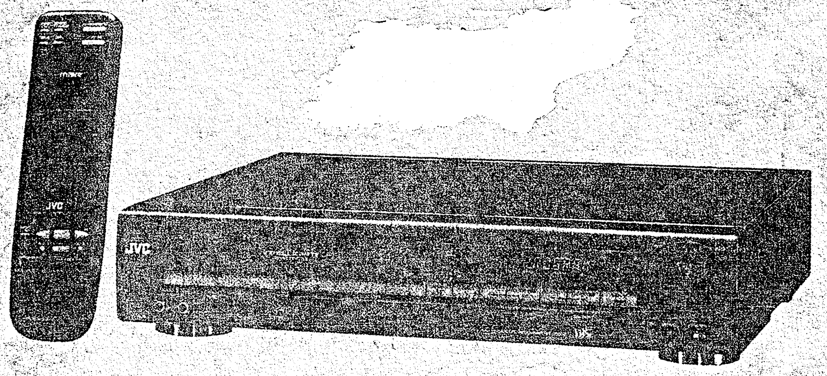
V03591

JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-D800E/EG



VHS PAL

SPECIFICATIONS

GENERAL

Power requirement	AC 220 – 240 V∿, 50/60 Hz
Power consumption	24 W
Temperature	5°C to 40°C (Operating) –20°C to 60°C (Storage)
Operating position	Horizontal only
Dimensions (WxHxD)	435 x 95 x 345 mm
Weight	5.2 kg
Format	VHS PAL standard
Tape width	12.65 mm
Tape speed	23.39 mm/sec
Maximum recording time	240 min. with E-240 video cassette

VIDEO

Signal system	PAL colour and CCIR monochrome signals, 625 lines/50 fields
Recording system	Rotary two-head helical scan system with a slant double-azimuth combination video head
Input	0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output	1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio	43 dB (Rohde & Schwarz noise meter)
Horizontal resolution	250 lines

AUDIO

Recording system	Longitudinal track
Input	–3.8 dBs, (CENELEC standard) more than 50 k-ohms, unbalanced
Output	–3.8 dBs, (CENELEC standard) less than 1 k-ohm, unbalanced (100 k-ohms, load)
Frequency range	70 Hz to 10,000 Hz

TUNER

Tuning system	Frequency synthesized tuner	
TV channel storage capacity	48 positions (+ AUX position)	
Channel coverage	VHF	47 – 111 MHz 111 – 300 MHz 302 – 470 MHz (Hyper band for PAL)
	UHF	470 – 862 MHz
Aerial output	UHF channel 36 (adjustable 32 – 40)	

TIMER

Clock reference	Quartz-crystal
Programme capacity	1-year/8-programme timer
Memory backup time	60 min.

ACCESSORIES

Provided accessories	Aerial cable Infrared remote control unit "R6" battery x 2
Optional accessories (EG)	VPV adapter VU-V120E VPT adapter VU-V140E
Optional accessories (E)	VPS adapter VU-V110E VPV adapter VU-V120E VPS/VPV adapter VU-V100E VPT adapter VU-V140E VPS/VPT adapter VU-V150E

Design and specifications subject to change without notice.

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No. 82299
April 1992

NOTE: For a technical description, please refer to Technical Guide VTG82063 General.

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1. The Instructions shown pertain specifically to the Model HR-D800E/EG. For detailed descriptions, be sure to consult the Instruction booklets of the other Models.
2. The following table lists the differing points between Models (suffixed HR-D800E and HR-D800EG) in this series.

Model Item			HR-D800EG	HR-D800E
TV TUNER	Channel coverage	VHF	47 – 111 MHz	← *1)
			111 – 300 MHz	← *1)
			302 – 470 MHz	← *1)
		UHF	470 to 862 MHZ	← *1)
TIMER	Memory back-up time		60 min	60 min
	VPS		Built-in	Option (VU-V110E)
TELETEXT	VPV		Option (VU-V120E) *2)	Option (VU-V100E) *3)
	VPT (with TOP)		Option (VU-V140E) *2)	Option (VU-V150E) *3)

Notes: **1) ← The same as model at left.* **3) VU-V100E/VU-V150E with VPS*
**2) VU-V120E/VU-V140E without VPS*

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded (▒) parts are critical for safety.
   Replace only with specified part numbers.
   Note: **Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.**

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

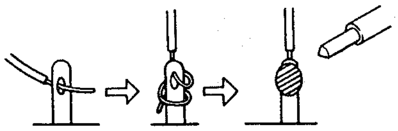


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

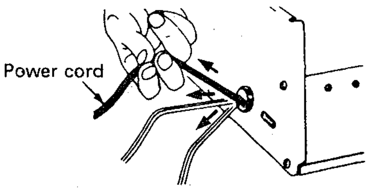


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number :** E03830-001
    2) **Required tool :** Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

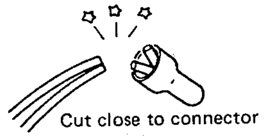


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

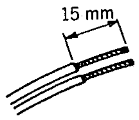


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

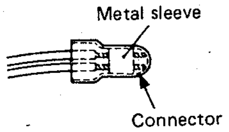


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

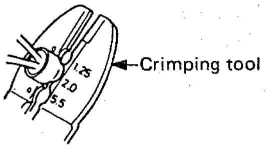


Fig. 6

(5) Check the four points noted in Fig. 7.

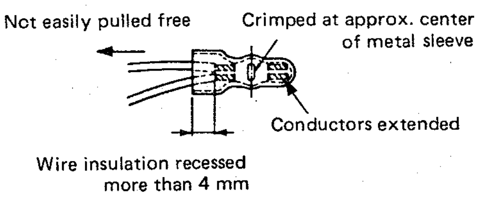

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions, Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

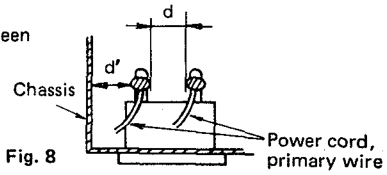


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

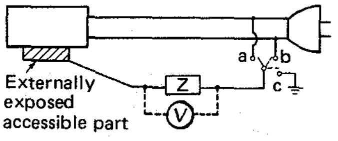


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.

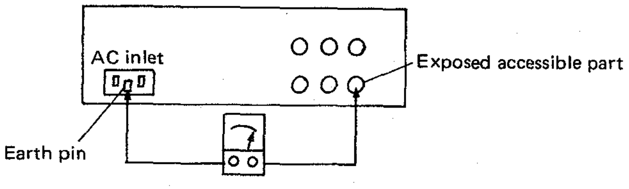


Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	—	AC 900 V 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

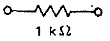
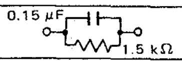
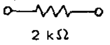
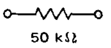
AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	 1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	 0.15 µF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	 2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		 50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

Safety Precautions

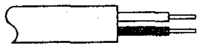
The rating plate and the safety caution are on the rear of the unit.

WARNING — DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

IMPORTANT

Connection to the mains supply plug in the United Kingdom.

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with the following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:
Blue wire to terminal coded N (Neutral) or coloured Black.
Brown wire to terminal coded L (Live) or coloured Red.
If in doubt — consult a competent electrician.

CAUTION

- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

Omkopplaren OPERATE på denna apparat är sekundärt kopplad och skiljer inte apparaten från nätet i läge OPERATE OFF.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

BEMAERK: I stilling OFF er apparatet stadig forbundet med lysnettet Hvis det ønskes fuldstændig afbrudt skai netledningen trækkes ud.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

IMPORTANT:
Please read the "Precautions" section of this instruction manual before installing or operating the recorder.

WARNING

There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in Eastern European countries (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SECAM-L signals.

IMPORTANT: It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.

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How To Use This Instruction Manual

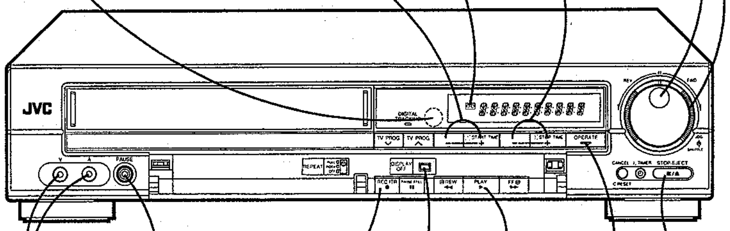
This instruction manual has been designed with both new and experienced users in mind. The first half offers detailed, step-by-step instructions for setting up your video recorder, and on using its basic functions. The second half provides instructions on the many other functions available on your video recorder. So just by following the instructions in the "Getting Started" and "Basic Operation" sections of this manual, you can master all of your recorder's basic functions, including timer-recording. Once you're sufficiently familiar with basic operation, or if you're already an experienced video user, you can move on to the more advanced functions introduced on the following pages. Related features have all been clustered together for easy reference, and their categories (playback, recording, timer, etc.) are easily recognisable by the symbol appearing in the page header. If you ever need to refer to another page for instructions or information, you will be told so by a ☞ mark pointing to the page number.

Remember, you must use your video recorder correctly to fully enjoy it. Please use this manual effectively. It's the surest and quickest way to unlock the full potential of your new JVC video recorder.

This instruction manual covers two model versions: "EG" and "E". Be sure to check which model you have purchased.
EG: VPS decoder built-in.
E: VPS decoder not built in. You must connect an optional adapter to take advantage of VPS service. ☞p.28

Controls, Indicators, And Connectors

Front Panel



"Cassette Loaded" mark

JOG/SHUTTLE controls ☞p.21

Infrared beam sensor window
Point the remote control toward this

START TIME buttons ☞p.18

STOP TIME buttons ☞p.19

VIDEO and AUDIO inputs

REC/ITR button ☞p.23

PLAY button

STOP/EJECT buttons

PAUSE terminal ☞p.30

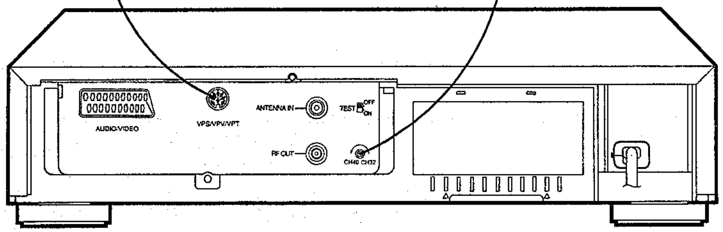
DISPLAY OFF button ☞p.31

OPERATE button with LED indicator

Back Panel

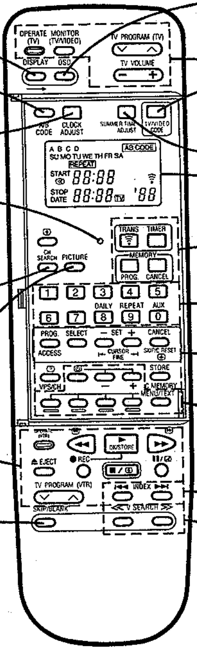
VPT connector ☞p.34
VPS connector (E version) ☞p.28

RF output channel frequency adjustment screw



Wireless Remote Control

Open the remote's cover to access the buttons under the cover.



☞p.22

A/B Code Changing ☞p.31

LCD Clock Adjust

Initialises the LCD memory:
If necessary, insert a pointed object into this hole and push the switch located inside.

☞p.12

PICTURE Control ☞p.21

Basic Functions

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OSD (On-Screen Display)
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TV Operation

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LCD (Liquid Crystal Display)

LCD Timer Programming

Multi-Purpose Numeric Keys

Timer, Tuner and Counter

Teletext Operation ☞p.34

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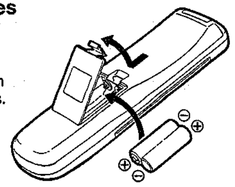
Variable-Speed Search

Installing Batteries

1. Open the battery compartment cover.
2. Insert 2 "R6"-size batteries (provided) in the correct directions.
3. Replace the cover.



NOTE:
Some buttons have additional labels (mostly pictograms) for teletext operations. You will find instructions for these in the Instruction Manual of the teletext adapter.

How To Use

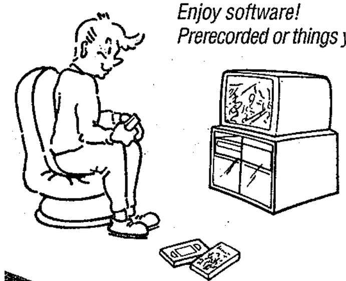
The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets of JVC and other brands. ☞p.33

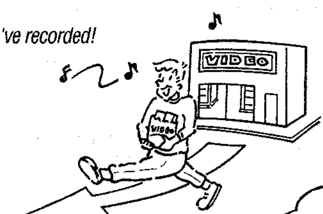
- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

Getting To Know Your Video Recorder

The 3 Basic Ways Of Using Your Video Recorder

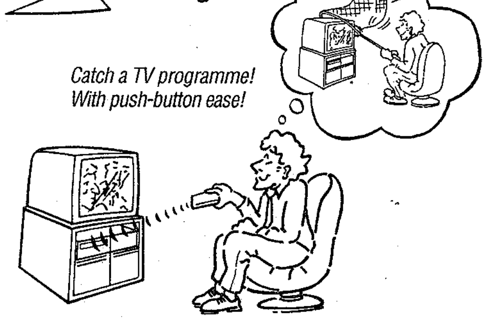
Enjoy software!
Prerecorded or things you've recorded!





Playback

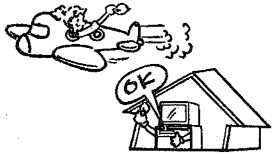
With the video recorder properly connected to your TV set, viewing videos is as easy as pushing the Play button. Prerecorded VHS software is available just about anywhere, and your video recorder will let you enjoy it all. And, of course, you can enjoy those programmes you've recorded yourself too.



Catch a TV programme!
With push-button ease!

Recording

Just press the Record and Play buttons together on your remote control. The recorder will record whatever it is that you're watching. In other words, you can instantly "catch" a TV programme in progress to see it again later, show it to someone else, or keep it as part of your video library. Recording is possible for 4 hours on a single E-240 cassette.



Record TV programmes while you're away.
Watch TV programmes when you want.

THE LATE SHOW

Timer-Recording

By using the built-in timer, you can set your video recorder to record TV programmes for you while you're asleep, while you're away, or while you're doing something else. Then you can watch those programmes later, whenever it's convenient, whenever you want. This is what's called "timeshifting", and now you can do it the JVC way.

Some Other Functions On Your Video Recorder

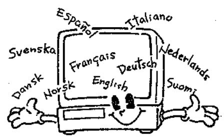
Express Timer

Makes timer programming as easy as pressing three buttons on the recorder. Start time, stop time, engage — that's all!

GOOD MORNING
GOOD MORNING

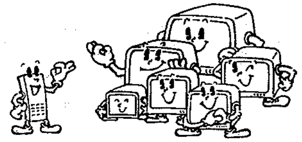
"Message" Display Panel

The video recorder "talks" to you from its message display panel. It's easy to understand what the recorder is doing at any time — a friendlier way to interact with your video deck.



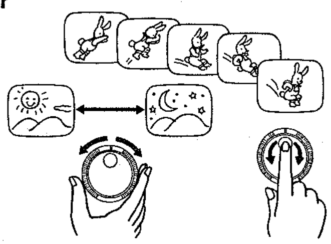
Multi-Language On-Screen Display

Ten languages to choose from. So you can check the engaged mode, program the timer, and more, while watching on-screen messages in your own language.



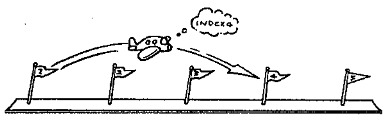
Multi-Brand-TV-Compatible Remote Control

Compatible with most major brands of televisions for basic control functions. Put an end to two-handed remote control.



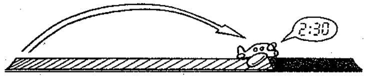
Jog/Shuttle Controls

Fast, accurate visual search from slow motion to fast motion, or frame-by-frame search, in either direction. Useful in editing or playback.



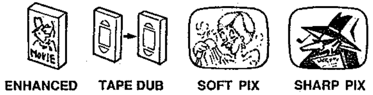
Index Search

Zooms to the index code number you specify. Easy location of index-coded programmes at the touch of a button. Index codes are automatically marked by the recorder at the beginning of each recording.



Blank Search

Lets you find the beginning of a non-recorded section automatically when you want to record on a partially-recorded tape. No more blind searching. Automatically displays the tape's remaining time too.



Picture Control

One-touch control over the type of video picture you want. Make it clearer, make it better for dubbing, make it softer, make it sharper — do it all with Picture Control.

Making The Right Connections

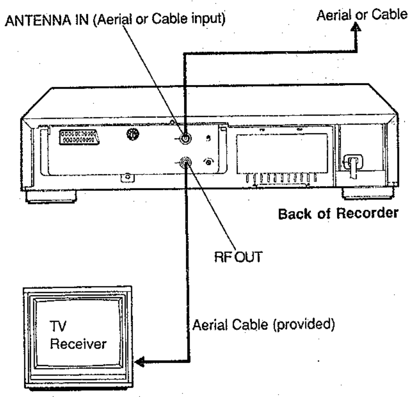
It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

A RECORDER-TO-TV CONNECTION

RF CONNECTION

For TV sets without AV input terminals:

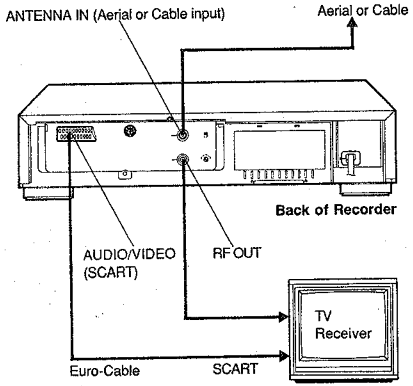
1. Connect the TV aerial cable to the recorder.
2. Connect the recorder to the TV's aerial terminal.



AV CONNECTION

For TV sets with AV input terminals:

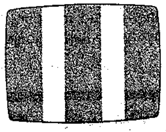
1. Connect the aerial, recorder and TV as per "RF CONNECTION".
2. Connect the recorder to the TV's 21-pin SCART connector.



B ADJUST VIDEO CHANNEL (UHF 36)

With an RF connection, the video recorder sends picture and sound signals through the connecting cable to your TV on UHF channel 36.

TEST SIGNAL



1. Turn on the recorder.
2. Set the TEST switch to ON.
3. Set your TV to the video channel. Tune to the real channel 36, to bring the two vertical white bars on the screen most clearly.
   - Your TV should be set to the channel designated for use with a video recoder or to a spare channel if there is not a specified channel.
4. Reset the TEST switch to OFF.

NOTE:

If some interference noise is seen on the screen because of broadcasts on neighbouring channels, it is necessary to shift the video channel from UHF channel 36. This is possible for UHF channels 32 through 40. Consult your JVC dealer for making this adjustment.

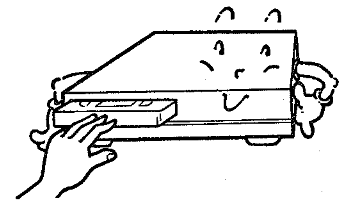
IMPORTANT:

To operate the recorder with your TV using an RF connection, it is always necessary to set your TV's channel to VIDEO CHANNEL. With an AV connection, set the TV to the VIDEO (or AV) mode.

Handling Video Cassettes

A LOADING A CASSETTE

1. Insert a cassette with its label side facing you.
   - If the cassette is not loaded firmly it will be ejected.



B UNLOADING A CASSETTE

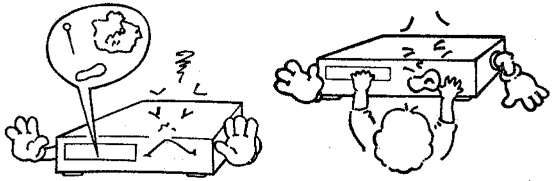
1. Press EJECT.
   - If the cassette will not eject, check to see if "TIMER" is displayed on the message display panel. If it is, press the TIMER button to turn it off.

NOTES:

- Be sure to insert the cassette firmly into the slot; otherwise it will be automatically ejected.
- The automatic loading mechanism will operate only when the cassette is inserted correctly.

WARNING

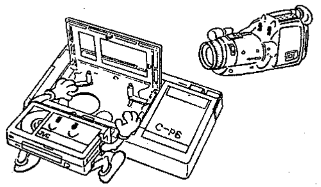
- Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.
- Do not try to pull out a cassette once automatic loading has started.



Usable Cassettes

Full-Size VHS
E-30 (SE-30**)
E-60 (SE-60**)
E-90
E-120
E-180 (SE-180**)
E-240

Compact VHS*
EC-30 (SE-C30**)
EC-45 (SE-C45**)

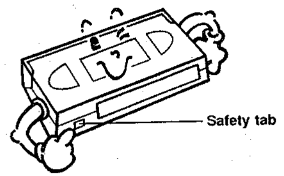


* Compact VHS camcorder recordings (PAL) can be played on this video recorder. Simply place the recorder cassette into a C-P6 Cassette Adapter and it can be used just like any full-sized VHS cassette.

** This video recorder can record on regular VHS and Super VHS cassettes. However, it will record and play back regular VHS signals only. It is not possible to play back a recorded Super VHS tape.

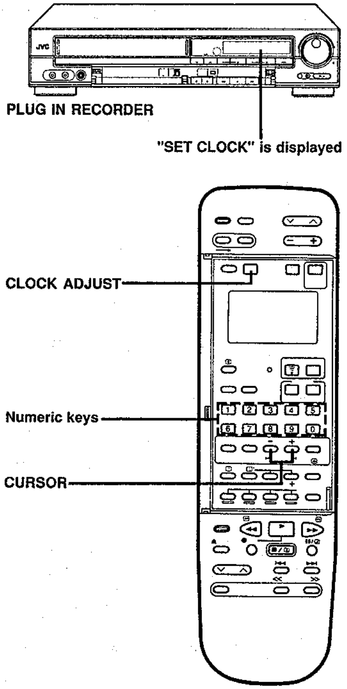
Accidental Erasure Prevention

To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



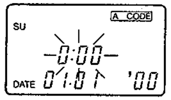
Setting The Clock

Since your video recorder bases all of its timer recording start and stop "decisions" on the time kept by its built-in clock, accurate setting of this clock is crucial for proper timer-recording results. Follow these instructions to set the remote control's LCD clock and transfer its contents to the recorder's clock.


PLUG IN RECORDER
"SET CLOCK" is displayed
CLOCK ADJUST
Numeric keys
CURSOR

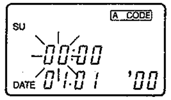
A LOAD BATTERIES (☞p.5)

1 Check the LCD.
- The time display section (0:00) will be blinking.


SU
A CODE
0:00
DATE 0 1-0 1 '00

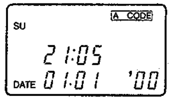
B START CLOCK SETTING

2 Press CLOCK ADJUST.
- Blinking digits will prompt you to items that can be set.


SU
A CODE
00:00
DATE 0 1-0 1 '00

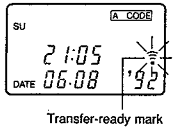
C INPUT THE TIME

3 Press the appropriate numeric keys.
- Example: For 21:05, press 2 1 0 5. Always enter "0" before single-digit entries.


SU
A CODE
2 1:05
DATE 0 1-0 1 '00

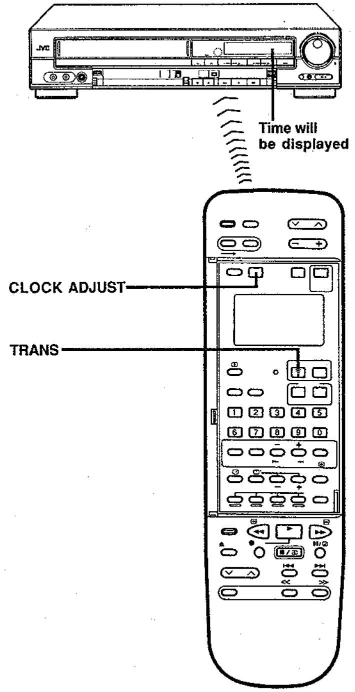
D INPUT THE DAY/MONTH/YEAR

4 Press the appropriate numeric keys.
- Example: For 6th August, 1992, press 0 6 0 8 9 2. Always enter "0" before single-digit entries.
- After setting the year, the transfer-ready mark will appear and blink.


SU
A CODE
2 1:05
DATE 06-08 '92
Transfer-ready mark

TO MAKE CORRECTIONS

Press either CURSOR button so that the item you want to change blinks. Re-input that item. Continue to step E.


Time will be displayed
CLOCK ADJUST
TRANS

E TRANSFER AND START THE CLOCK

5 Press TRANS.
- The day of the week will automatically appear.
- The remote control's clock will start. At the same time, the set data will be transferred to the recorder.

AFTER A POWER OUTAGE

Since your video recorder has a 60-minute backup memory, it will not be affected by short power outages. If mains power is unavailable for over one hour, however, the recorder's display will revert to "SET CLOCK". In such a case, simply transfer the remote control's time to the recorder.

1 Press CLOCK ADJUST.
2 Press TRANS.

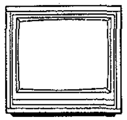
For quick "summer time" (Daylight Saving Time) adjustment, ☞p.31.

NOTES:

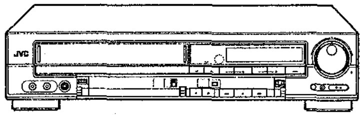
- If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.
- If the year digits are automatically cleared in step D, it is possible that you have input 29th February for a non-leap year. Input again.
- When the batteries are exhausted, the time display will change to "0:00" and start blinking. Replace all the batteries and set the clock again.

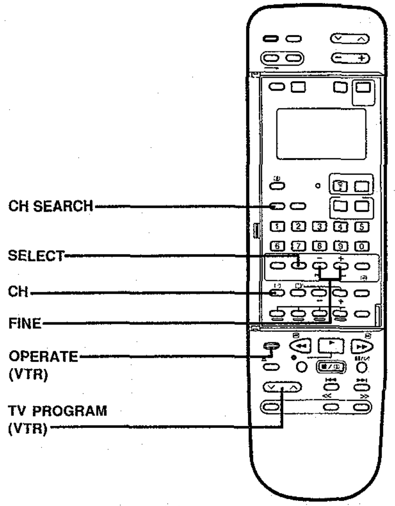
Setting The Tuner

The procedure introduced here lets you assign receivable channels in your area to channel positions on your video recorder's tuner. Once stored, these can be accessed with the TV PROGRAM (VTR) ∨/∧ button. During channel scanning, empty tuner channel positions will be skipped so you won't have to go through any "blank" channels to get to the one you want.



POWER ON;
SELECT VIDEO
CHANNEL (OR AV MODE)





A ENGAGE THE CHANNEL SET MODE

1. Press OPERATE (VTR).

PR 1

2. Press CH.

B SEARCH FOR RECEIVABLE CHANNELS

3. Press CH SEARCH.
   - Automatic scanning will start at the lowest channel number, and stop when a broadcast is detected.

REAL Ch:26

⬇

SKIPPED

- Regular channels (Ch) are scanned first, then cable channels (CC).

C FINE-TUNE THE CHANNEL

- Check the picture on the TV screen, and fine-tune it if necessary. When the picture is clear, proceed to Step D.

4. Press SELECT.
5. Press FINE (+ or –) so that the "–" sign appears at the centre.

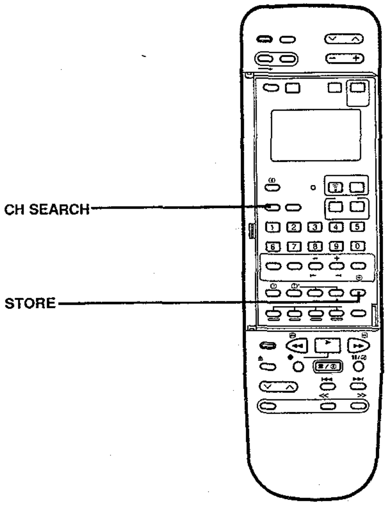
FINE- Ch:26

6. Press SELECT.

D SELECT A TUNER POSITION

7. Press TV PROGRAM (VTR) to select the tuner channel position where you wish to store that broadcast.

SKIPPED



E STORE THE CHANNEL

8. Press STORE.

STORED 1

⬇

REAL Ch26

- This message indicates that UHF channel 26 has been stored into the tuner's channel position 1.

F CONTINUE

9. Repeat steps B through E for other receivable channels.

TO CHANGE PRESET CHANNELS

- If you have already preset some channels, do not use the automatic Channel Search function to change or add channels. ☞ p.32.

ATTENTION

The "real channel" numbers displayed on the recorder may not correspond to channel designations in your area.

ITALY

Display	Ch	13	14	15	16	17	18	19	20	11	12
Corresponding channel		A	B	C	D	E	F	G	H	H1	H2

BELGIUM

Display	CC	01	02……10	11……20
Corresponding channels		80(M1)	81(M2)…89(M10)	90(U1)…99(U10)

SWITZERLAND

Display	CC	75	76	77
Corresponding channel		X	Y	Z

NOTES:

- If you don't want to store the broadcast detected in Step B, simply press CH SEARCH to continue automatic scanning. Search will stop as soon as another broadcast is detected.
- Be sure to proceed to the next step within 60 seconds, otherwise Channel Search will be cancelled automatically. If this happens and you wish to continue channel setting, press CH SEARCH again. Channel scanning will resume, beginning with the next receivable channel.

Mode Displays — What They Mean

Message Display Panel

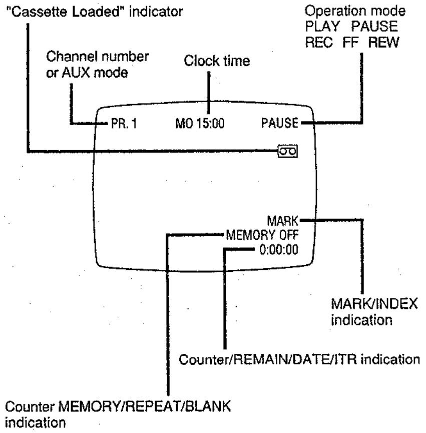
The operation mode is displayed on the recorder's display panel automatically. Displayed messages are designed to be self-explanatory. Here are some of the more common displays:

DISPLAY	MODE	DISPLAY	MODE
PLAY	Play	PAUSE (with channel number)	Record-Pause
STILL	Still	FWD SEARCH	Forward Search
FF	Fast-Forward	REV SEARCH	Reverse Search
REW	Rewind	FWD SLOW	Forward Slow
REC (with channel number)	Record	REV SLOW	Reverse Slow
TIMER REC	Timer-Recording	EJECT	Eject

For a more comprehensive list, ☞ p.35.

On-Screen Display

Operation modes (except PAUSE) are displayed on the TV screen only when the On-Screen Display function is set to ON. ☞p.15.


"Cassette Loaded" indicator
Channel number or AUX mode
Clock time
Operation mode PLAY PAUSE REC FF REW
PR. 1
MO 15:00
PAUSE
MARK
MEMORY OFF
0:00:00
MARK/INDEX indication
Counter/REMAIN/DATE/ITR indication
Counter MEMORY/REPEAT/BLANK indication

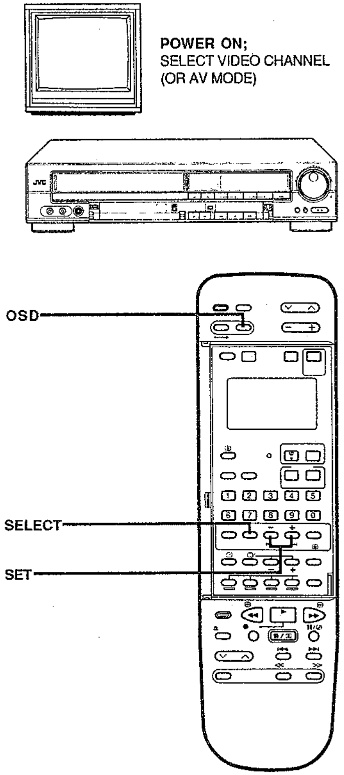
AUTOMATIC INDICATION

- **Channel, operation mode, and "Cassette Loaded" mark**
  When the status is changed, the corresponding indication is displayed on the screen for 5 seconds. The PAUSE mode indication, however, is displayed for as long as the Pause mode is engaged.
- **Time and date**
  When time setting is completed, time and date are displayed for 5 seconds.

MANUAL RECALL

1. Press OSD (On-Screen Display).
   - All indications corresponding to the current status is displayed for 5 seconds, leaving the counter information (counter, REMAIN or DATE) on the screen.
   - To check only the counter information, press DISPLAY.
2. Press OSD to clear the counter display.

On-Screen Set Up


POWER ON;
SELECT VIDEO CHANNEL
(OR AV MODE)
OSD
SELECT
SET

Language Select

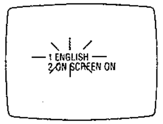
Although the preset on-screen language is English, you can set your video recorder to display on-screen messages in a choice of 10 languages.

A TURN ON THE RECORDER

1. Press OPERATE.

B ACCESS THE LANGUAGE SELECT MODE

2. Press OSD for longer than 2 seconds.
   - The current language and On-Screen ON/OFF status are displayed on the screen.
   - The displayed language blinks.


1 ENGLISH
2 ON SCREEN ON

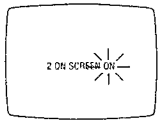
C SELECT THE LANGUAGE

3. Press SET + or – until your desired language is displayed.
   - Available languages are: ENGLISH, DEUTSCH, FRANCAIS, ITALIANO, ESPANOL, NEDERLANDS, SVENSKA, NORSK, SUOMI, and DANSK, in the order they are called up.
4. Press OSD while the language is blinking.
   - Now all on-screen messages will be displayed in the selected language.

On-Screen Display Function ON/OFF

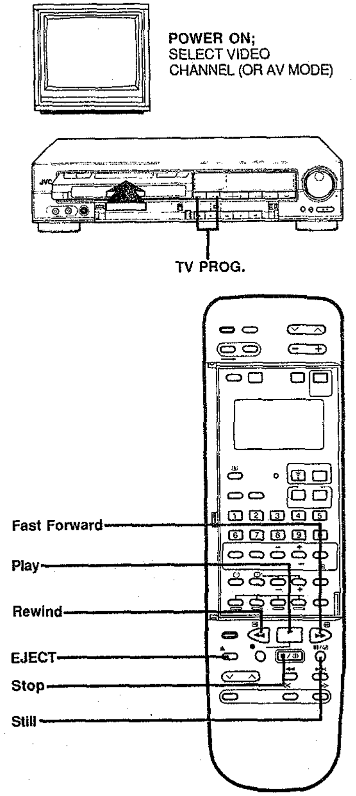
If you do not want on-screen displays, the function can be cancelled.

1. Press SELECT after step 2 above.
   - The On-Screen ON/OFF status is displayed.
2. Press either SET button.
3. Press OSD while the status is blinking.
   - Even with the function set to OFF, "PAUSE" is displayed for as long as the Pause mode is engaged. Of course, on-screen timer programming is not affected either.


2 ON SCREEN ON

Playback

The easiest, most basic operation possible with your video recorder is tape playback. Already-recorded signals on a video tape are read by your video recorder and displayed on your TV just like a TV programme.



A LOAD A CASSETTE

1 Insert a cassette.
- The recorder power will come on automatically.
- If the safety tab on the cassette is removed, playback will start automatically.

B TO START PLAYBACK

2 Press ► (Play).

C TO STOP PLAYBACK

3 Press ■ (Stop).

D TO REWIND OR FAST-FORWARD

4 Press ◄◄ (Rewind) to rewind the tape.
5 Press ►► (Fast Forward) to fast-forward the tape.
- Press ■ (Stop) to stop rewind or fast-forward.

E TO EJECT THE TAPE

6 Press EJECT.

High-Speed Forward And Reverse Search

During Playback:

1 Press ►► (Fast Forward) for high-speed forward search.
2 Press ◄◄ (Rewind) for high-speed reverse search.
3 Press ► (Play) to resume normal playback.
- For short searches, keep ►► (Fast Forward) or ◄◄ (Rewind) pressed for more than 2 seconds. When released, normal playback will continue.

Still Playback And Frame Advance

During Playback:

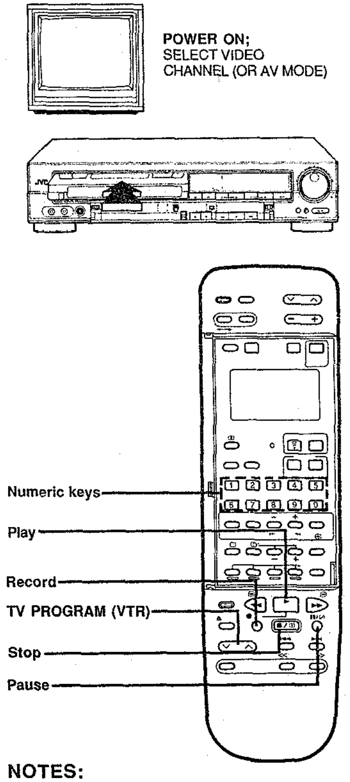
1 Press ❚❚ (Still) to view a still picture.
2 Press again to advance the picture frame by frame.
3 Press ► (Play) to resume normal playback.

NOTES:

- The recorder automatically stops when still continues for more than 5 minutes.
- If the still picture is unstable (vertical jitter) use the recorder's TV PROG. (in lieu of V. LOCK) buttons to correct the picture.
- During search playback, some noise bars will appear.
- If noise bars appear during playback, correct using manual tracking. ☞ p.20.
- There is no audio during search, still, or frame-by-frame playback.
- The recorder automatically rewinds when the end of the tape is reached.

Recording

TV signals being received by the recorder's built-in tuner can be recorded onto a video tape. This is realtime video recording.



A LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

B CHOOSE A PROGRAMME

2 Press TV PROGRAM (VTR) or the numeric keys to select the channel you wish to record.

C TO START RECORDING

3 Press ● REC (Record) and ► (Play) simultaneously.

D TO PAUSE RECORDING

4 Press ❚❚ (Pause).
5 Press ► (Play) to resume recording.

E TO STOP RECORDING

6 Press ■ (Stop).

To Watch Another Programme While Recording

During Recording:

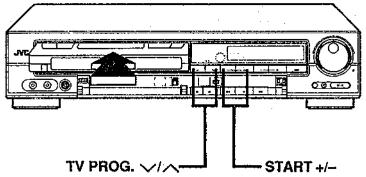
1 Use the channel controls on the TV to select the other channel you wish to view.
- The programme selected with the TV channel controls will appear on the TV screen while the one selected with the video recorder's channel controls will be recorded on the tape.

NOTES:

- To start recording with the recorder's REC/ITR button, press it once on its own. Pressing REC/ITR more than once activates the Off-Timer. ☞ p.23.
- After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.
- The recorder automatically stops when record-pause continues for more than 5 minutes.
- If the Record button does not work, check to see if the cassette's safety tab has been removed.
- When a VPS programme is being broadcast on the selected channel, "VPS" appears on the display panel. ☞ p.28 for information on VPS.
- The channel cannot be changed while recording is in progress. To change the channel, engage the record-pause mode, then change the channel.
- The recorder automatically rewinds when the end of the tape is reached during recording.

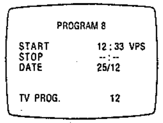
Timer-Recording

The "Express Timer" introduced here is the quickest method of programming your video recorder's timer. TV shows to be broadcast within 24 hours can be programmed for automatic recording simply by pressing three buttons (conveniently numbered) on your recorder's control panel. For timer programming using your remote control, ☞ p.24. TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.



TO WATCH THE ON-SCREEN DISPLAY

At step B, if the TV is on and is set to the video channel (or AV mode), the data you input will also be shown on the TV screen.



```
PROGRAM 8

START      12 : 33 VPS
STOP        -- : --
DATE       25/12

TV PROG.      12
```

Express Timer Programming

A LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.
- The recorder's display panel will show the channel being received.

```
VPS        PR. 12
```

2 If you want to record another channel, press TV PROG. ∨/∧ to change the channel.

B SET THE START TIME

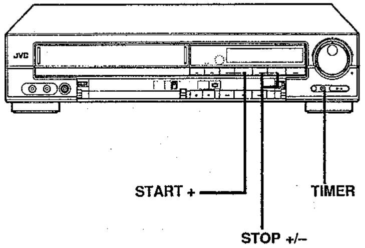
3 Press START +.
- This engages the programme set mode, and the current time will appear.

```
12:33 _ ⌟
```

4 Press START +/– to set the start time.
- START + advances the time and START – reverses the time.
- Press briefly to change by 1 minute. Hold the button down to change by 30-minute increments.

```
16:00 _ ⌟
```

- After the start time is set, "TODAY" or "TOMORROW" will be displayed for 3 seconds.



TO DISENGAGE THE TIMER

For safety, your recorder disables all other functions while in the timer mode.
- To use your recorder, first disengage the timer mode by pressing TIMER again. Now all functions will be operable.
- To re-engage the timer, press TIMER.

TO CHECK PROGRAMMED SETTINGS

While in the timer mode, press START + to check the settings you have programmed into the Express Timer. Each time START + is pressed, the display will change: Start Time, Stop Time, Date, Channel, and "blank" again. DO NOT press START + while the timer mode is disengaged because this will clear the Express Timer's memory to make room for a new entry.

For other timer programming methods, ☞ p.24.
Any questions? ☞ p.28.

C SET THE STOP TIME

5 Press STOP +.
- The start time will be transferred over to the stop time position automatically.

```
16:00 _ ⌟ 16:00
```

6 Press STOP +/– to set the stop time.
- STOP + advances the time and STOP – reverses the time.
- Press briefly to change by 1 minute. Hold the button down to change by 30-minute increments.

```
16:00 _ ⌟ 17:45
```

D SET TO TIMER MODE

7 Press TIMER.
- The recorder will enter the timer mode and power will go off.

```
TIMER    12:35
```

TO CHANGE CHANNELS

If needed, you can change the channel at any time during steps B and C. This changes the channel being received and the channel to be recorded.

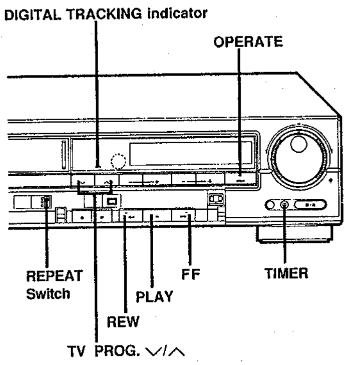
```
VPS        PR.26
```

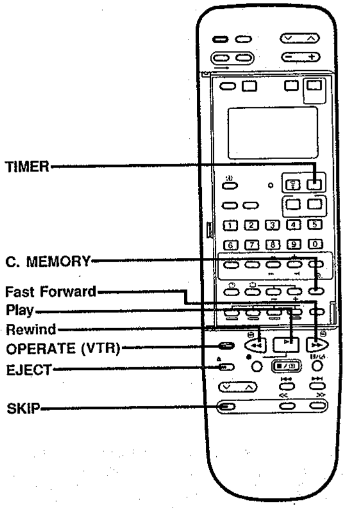
ATTENTION:

- If you have programmed the timer's PROGRAM 8 (via the on-screen programming facility that is available when an optional VPT adapter is connected, ☞ p. 34), using the Express Timer will clear that data from PROGRAM 8 and replace it with the Express Timer data.

▶ For Playback

Take advantage of special functions possible with the recorder's controls or the remote control.





NOTE:
When a new tape is inserted, the recorder enters the automatic tracking mode automatically.

Repeat Playback (Recorder)

Your video recorder can automatically play back the whole tape or an index-marked portion 5 times repeatedly.

1. Set the REPEAT switch to FULL or INDEX.
   - For Index Repeat playback, locate the index code at which you wish to start playback. (Index Search, ☞p.22.)
2. Press PLAY. Repeated playback will start. After repeating 5 times consecutively, playback will stop.
   - Be sure to reset the REPEAT switch to OFF before pressing the PLAY button again; otherwise repeat playback will resume.

Manual Tracking (Recorder)

Your video recorder is equipped with automatic tracking control; the DIGITAL TRACKING indicator lights or blinks when automatic tracking is on. During playback, tracking can be adjusted manually using the TV PROG. buttons.

1. Press TV PROG. (∨ and ∧) simultaneously for manual override.
   - The DIGITAL TRACKING indicator will go out.
2. Press TV PROG. (∨ or ∧) to adjust tracking.
3. Press TV PROG. (∨ and ∧) simultaneously to return to automatic tracking.

To adjust tracking during slow motion, simply press TV PROG. (∨ or ∧) to obtain the best picture.

Next Function Memory (Recorder and Remote Control)

For automatic start of playback after the tape is rewound:

1. Press ◀◀ (Rewind).
2. Press ► (Play) within 2 seconds.

For automatic power off after the tape is rewound:

1. Press ◀◀ (Rewind).
2. Press OPERATE (VTR) within 2 seconds.

For automatic eject after the tape is rewound: (Remote Control only)

1. Press ◀◀ (Rewind).
2. Press EJECT within 2 seconds.

For automatic timer standby after the tape is rewound:

1. Press ◀◀ (Rewind).
2. Press TIMER within 2 seconds.

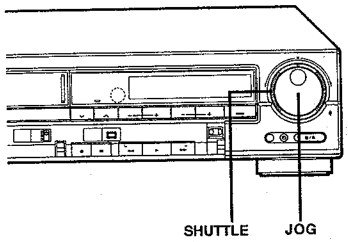
- If you want the "next function" to automatically start when the counter reads "0:00:00" (instead of at the beginning of the tape), press C. MEMORY so that the "M" mark appears before pressing ◀◀ (Rewind).

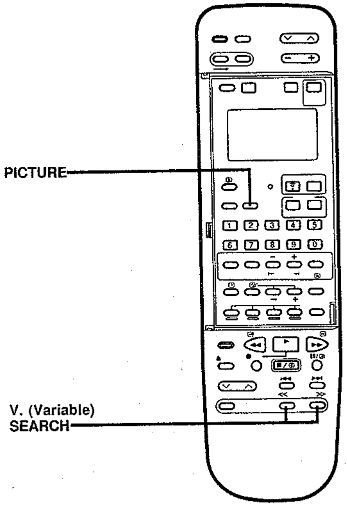
Skip Search (Remote Control)

Your recorder offers a simple way of skipping over unwanted sections of recorded TV programmes.

During Playback:

1. Press SKIP from 1 to 4 times.
   This fast-motions through 30-sec. to 2-min. of tape.
   - Playback resumes automatically.
   - Press ► (Play) to cancel a Skip Search midway.





ENGLISH

Variable-Speed Search, Slow Motion, And Jog Control

You can view pictures in slow to fast motion, or frame-by-frame, in either direction.

During Play or Still:

1. Turn the outer ring (SHUTTLE) in either direction. The farther the ring is rotated, the faster the search speed. Releasing the ring stops the picture in the Still mode.

or

1. Press either V.SEARCH button. Tape will move in the corresponding direction.
   - The more times the button is pressed, the faster the search speed.
   - To decrease speed, press the button for the opposite direction.

During Play or Still:

1. Turn the inner dial (JOG) in either direction for jog control. The tape moves forward or backward frame-by-frame at the speed with which the dial is turned.

To resume normal playback, press PLAY button.

Picture Control

Your video recorder has a built-in video processor that lets you choose the type of playback picture that's best for any given application.

During Play:

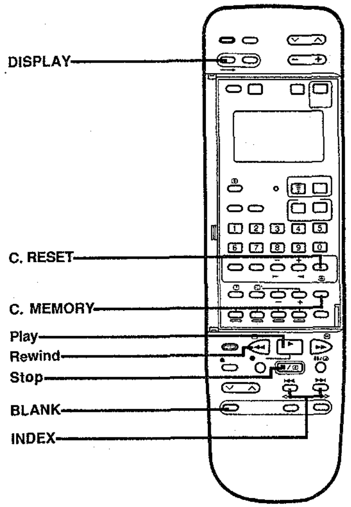
1. Press PICTURE as many times as required to reach the desired setting.
   - The display panel shows the setting for 5 seconds.

Display Panel	When To Use
ENHANCED	When viewing tapes with noise due to repeated playback, such as rental videos.
TAPE DUB	When editing to another recorder.
SOFT PIX	When you want a soft picture.
SHARP PIX	When you want a sharp picture.
OFF	When no modification is required.

NOTES:

- If noise bars appear during slow motion, correct using manual tracking. ☞ p.20.
- During variable-speed search, some noise bars will appear.

◀◀ ▶▶ For Tape Access



NOTES:

- Press ▶ (Play) or ■ (Stop) to cancel Index Search or Blank Search.
- If the end of the tape is reached during Index Search, the mode is cancelled and the tape is rewound to the beginning.
- When a fully recorded tape is used for re-recording new material, Blank Search can be used to detect the end of the new material.

Realtime Tape Counter

Your recorder's tape counter displays the hours, minutes, and seconds of a taped programme. During playback, your recorder's display panel will show a counter reading unless you change it using the DISPLAY button. To reset the counter to "0:00:00" at any time press C. RESET. Also the counter is automatically reset whenever you load a new cassette.

Counter Memory (Remote Control)

During Playback:

1. Press C. RESET at a point you wish to locate later.
   - The counter will read "0: 00: 00".
2. Press C. MEMORY.
   - "M" will appear in front of the counter digits.
3. When you wish to return to that point, press ■ (Stop) and then press ◀◀ (Rewind).
   - The tape will rewind and stop at about "0: 00: 00" automatically.

M 0:00:00

4. To cancel the Counter Memory mode, press C. MEMORY.

Index Search (Remote Control)

This function gives you quick access to any one of 9 index codes in either direction. Your recorder automatically marks index codes at the beginning of each recording.

During Playback or Stop:

1. Press INDEX ⏮ or ⏭ . "INDEX –1" or "INDEX +1" will be displayed and search will begin in the corresponding direction.
2. If you wish to access index codes 2 through 9, press INDEX repeatedly until the correct index number is displayed.
   - When the specified index code is found, playback will start automatically.

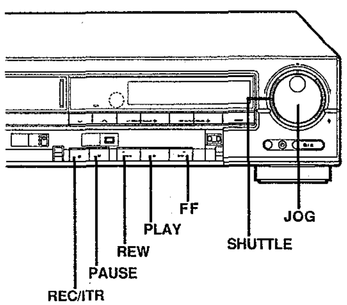
Blank Search (Remote Control)

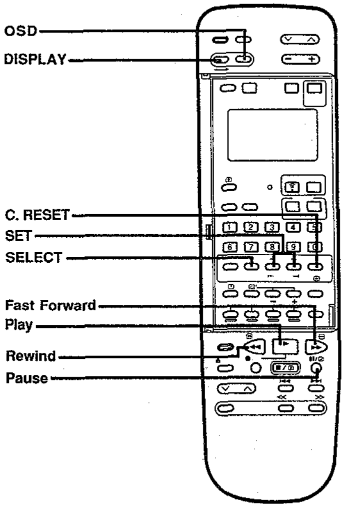
This function lets you quickly locate the blank portion of a partially recorded tape.

During Stop:

1. Press BLANK.
   - The recorder automatically fast-forwards or rewinds to the end of the recorded portion of tape, and stops.
   - The tape's remaining time is automatically displayed. Press DISPLAY to return to the realtime counter display.

● For Recording





NOTES:

- With Retake, rainbow noise may occur in the rewound and re-recorded section.
- The remaining time is inaccurate while the display is blinking. When blinking stops, the remaining time is shown.

Instant Timer Recording (Off Timer) (Recorder)

You can start a recording and then set the recorder to shut off automatically after a set duration.

During Recording:

1. Press REC/ITR (on the recorder). A "REC 0:30" indication appears, advising that power will switch off after 30 minutes.

REC 0:30

2. Press REC/ITR again to delay the off-time by 30-minute increments (up to 4 hours).
   - For a more precise setting, use the SELECT/SET buttons on the remote control unit to set the exact time required (possible up to 4 hours and 59 minutes).

Retake (Recorder and Remote Control)

You can cut out unwanted parts of a TV programme while you're recording it.

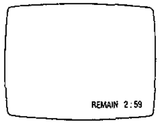
During Recording:

1. Press PAUSE.
2. Press FF or REW for normal-speed search to locate the beginning of the unwanted part.
   - When using the recorder's JOG/SHUTTLE control, turn the JOG dial or SHUTTLE ring in either direction.
   - Release to return to Record-Pause mode.
3. Press PLAY when you wish to resume recording.

Remaining Tape Time Indication
(Recorder and Remote Control)

When you need to know the tape's remaining time.

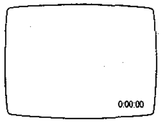
1. Press DISPLAY until "REMAIN" appears on the screen. Approximate remaining tape time is displayed.
2. To clear the screen, press OSD.
   - The display panel also shows remaining tape time, but, during recording, changes back to the "REC" mode display after 5 seconds.



Elapsed Recording Time Indication
(Recorder and Remote Control)

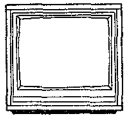
When you need to know the exact time of a recording.

1. Press C. (Counter) RESET to reset the counter to "0:00:00", and then start recording.
2. Press DISPLAY anytime when you want to check the elapsed recording time.
3. To clear the screen, press OSD.

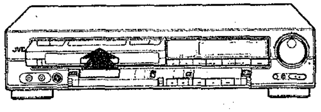


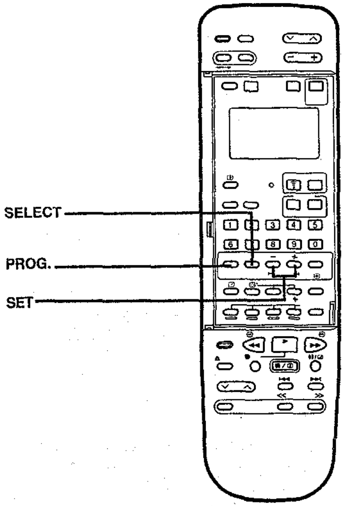
For Timer Recording

The on-screen and LCD timer programming methods are introduced here. Both have different advantages. With on-screen programming, you can follow easy-to-see guides on your TV screen. With LCD programming, you can preserve the programmed data in memory and transfer it to the recorder anytime when necessary. TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.



POWER ON;
SELECT VIDEO CHANNEL
(OR AV MODE)





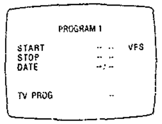
On-Screen Timer Programming

A LOAD A CASSETTE

1. Insert a cassette with the safety tab in place.
   - The recorder power will come on automatically.

B ACCESS THE ON-SCREEN PROGRAM DISPLAY

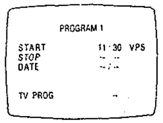
2. Press PROG.
   - You are ready to input data into Program No. 1.
   - To change the program number (1 – 7), press SET.



PROGRAM 1
START -- -- VPS
STOP -- --
DATE --/--
TV PROG --

C INPUT THE START TIME

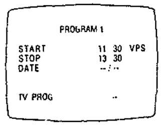
3. Press SELECT, and then SET to input the hour.
4. Press SELECT, and then SET to input the minute.



PROGRAM 1
START 11 30 VPS
STOP -- --
DATE --/--
TV PROG --

D INPUT THE STOP TIME

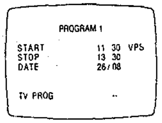
5. Press SELECT, and then SET to input the hour.
6. Press SELECT, and then SET to input the minute.



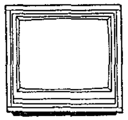
PROGRAM 1
START 11 30 VPS
STOP 13 30
DATE --/--
TV PROG --

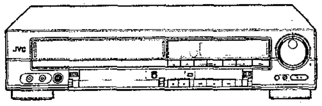
E INPUT THE DATE

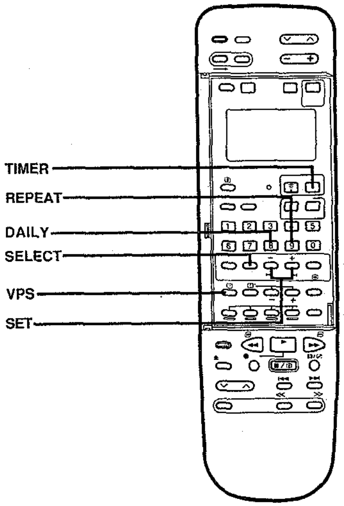
7. Press SELECT, and then SET to input the day.
8. Press SELECT, and then SET to input the month.



PROGRAM 1
START 11 30 VPS
STOP 13 30
DATE 26/08
TV PROG --



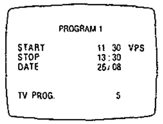




NOTE:
The data you input will also be shown on the message display panel.

F INPUT THE CHANNEL NUMBER

9. Press SELECT, and then SET to input the channel.
   - The screen colour changes to green.
   - Normally, you should leave "VPS" on so you can take advantage of VPS recording*. You can cancel VPS by pressing the VPS button whenever the memory program is open. If you have any questions about VPS, ☞p.28.



PROGRAM 1
START 11 30 VPS
STOP 13:30
DATE 26/08
TV PROG. 5

G END ONE PROGRAM

10. Press SELECT.
    - The program number will blink.
    - To make corrections, advance with SELECT to the item you wish to change and input new data with SET.
    - If you need to set another program, press SET and repeat steps C through G.

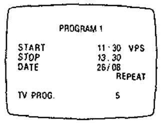
H SET TO TIMER MODE

11. Press TIMER.
    - The recorder will enter the timer mode and power will go off.
    - To release the timer mode, press TIMER again.

Variations in Step E (Weekly Program)

This function lets you set the recorder to timer-record at the same time on the same day every week. Use it to record weekly serials.

- First press REPEAT (numeric key "9") and then enter the date.

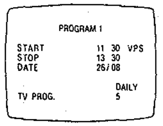


PROGRAM 1
START 11 30 VPS
STOP 13.30
DATE 26/08
REPEAT
TV PROG. 5

Variations in Step E (Daily Program)

This function lets you set the recorder to timer-record at the same time everyday. Use it to record daily serials.

- To record a daily serial starting on the day of setting, press DAILY (numeric key "8") and then press SELECT.
- To record a daily serial starting on a certain day, press DAILY and then enter the date.



PROGRAM 1
START 11 30 VPS
STOP 13 30
DATE 26/08
DAILY
TV PROG. 5

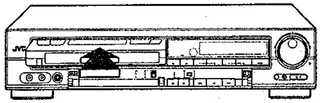
TO MAKE CORRECTIONS

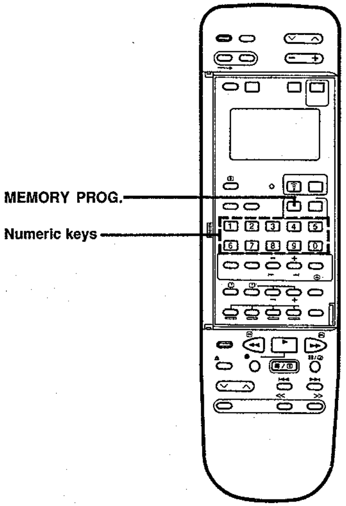
Press SELECT so that the item you want to change blinks, and press SET to set the new data.

Any questions? ☞p.28

* VPS adapter is required on "E" version.

For Timer-Recording (cont'd)





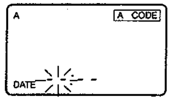
LCD Timer Programming

A LOAD A CASSETTE

1 Insert a cassette with the safety tab in place.
- The recorder power will come on automatically.

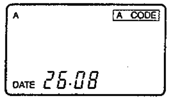
B ACCESS THE LCD TIMER PROGRAM

2 Press MEMORY PROG. (Program A)
- Four programs (A, B, C, and D) are available. To select another program, press MEMORY PROG.



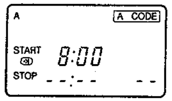
C INPUT THE DATE

3 Press the appropriate numeric keys.
- Example: For 26th August, press 2 6 0 8.



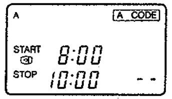
D INPUT THE START TIME

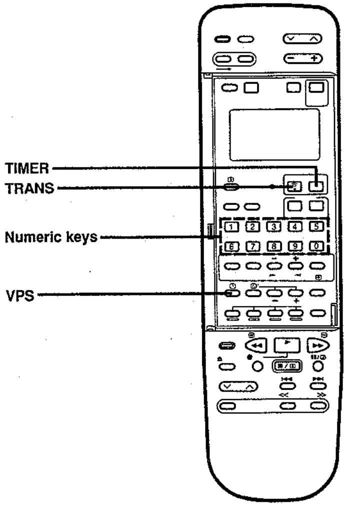
4 Press the appropriate numeric keys.
- Example: For 8:00, press 0 8 0 0.



E INPUT THE STOP TIME

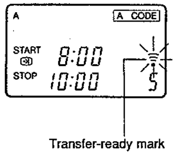
5 Press the appropriate numeric keys.
- Example: For 10:00, press 1 0 0 0.





F INPUT THE CHANNEL NUMBER

6 Press the appropriate numeric keys.
- Example: For channel 5, press 5.
- After the channel has been entered, the transfer-ready mark will appear and blink.
- Normally, you should leave " ⊛ " on so you can take advantage of VPS recording*. You can cancel VPS by pressing the VPS button whenever the memory program is open. If you have any questions about VPS, ☞p.28.



G TRANSFER THE DATA TO THE RECORDER

7 Press TRANS with the remote control directed to the recorder's Remote Sensor window.
- You will see "PROGRAM 1" on the display panel, telling you that the data has been successfully transferred to the recorder's Program 1 memory.

H SET TO TIMER MODE

8 Press TIMER.
- The recorder will enter the timer mode and power will go off.
- To release the timer mode press TIMER again.

Variations in Step C (Weekly Program)

This function lets you set the recorder to timer-record at the same time on the same day every week. Use it to record weekly serials.
- First press numeric key "9" (REPEAT) and then enter the date.

Variations in Step C (Daily Program)

This function lets you set the recorder to timer-record at the same time every day. Use it to record daily serials.
- To record a daily serial starting on the day of setting, press numeric key "8" (DAILY) and then press CURSOR → until the display changes to time input mode.
- To record a daily serial starting on a certain day, press numeric key "8" (DAILY) and then enter the date.

TO MAKE CORRECTIONS

During steps C – F, press either CURSOR button so that the item you want to change blinks, and enter new data.

Any questions? ☞ p.28.

* VPS adapter is required with "E" version.

For Timer-Recording (cont'd)

On Checking And Cancelling Programs

Since executed programs are automatically cleared from memory (except those for daily and weekly serials), cases where the entire memory is full should be rare. If this should happen, check the preset programs and cancel one or more to make room for the new program(s) you wish to input.

TO CANCEL A PROGRAM FROM THE RECORDER'S MEMORY

1. Press PROG.
   - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. Press CANCEL to erase the program from memory.
   - You can press CANCEL at any stage while the program is open.
   - To erase another program, press SET when a blinking program number is displayed.

TO CANCEL A PROGRAM FROM THE REMOTE CONTROL'S LCD MEMORY

1. Press MEMORY PROG. until you find a program you wish to cancel. (A, B, C, or D.)
2. Press MEMORY CANCEL to erase that program from the LCD memory.

Some Facts On Timer Operation

- If the end of the tape is reached during timer-recording, the cassette is automatically ejected and recorder's power is switched off with "TIMER REC" and "TAPE END" flashing alternately on the message display panel.
- When timer-recording is successfully completed, the recorder's power is automatically switched off.
- Since the timer starts and stops recording based on the time being kept by the recorder's built-in clock, the clock's time must be accurate for correct timer-recording results.

VPS Recording

Now available from some TV stations, VPS (Video Program System) is a service designed to assure safe, accurate timer-recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed. If your video recorder is an "EG" model, it already incorporates a built-in VPS decoder. If your recorder is an "E" model and you want to take advantage of this service (if available), you must connect an optional adapter (☞ Specifications) to the VPS/VPV/VPT connector on the rear panel of your recorder.

TO USE VPS SERVICE

- For each timer program, the initial setting is "VPS ON" and you will see "VPS" on the display panel together with a channel number. You do not have to cancel "VPS" even for non-VPS programmes, because those programmes will be recorded at the preset times.
- To cancel "VPS", press the VPS button. Pressing the VPS button alternates the setting, and "VPS ON" or "VPS OFF" is displayed for 2 seconds.
- When you open the LCD timer memory, the LCD display always shows " ⊡ ". If your video recorder is an "E" version and you have not connected a VPS adapter, be sure to cancel " ⊡ " by pressing the VPS button before transferring the memory data to the recorder.

Error Messages

The following error messages may appear on the message panel when you press the TIMER button to engage the Timer Standby mode. Here's why, and what you should do.

NO CASS

- Displayed for 5 seconds and the Timer Standby mode is cancelled.

WHY: There is no cassette in the recorder.
WHAT TO DO: Insert a cassette. Press TIMER again.

NO REC TAB

- Displayed for 5 seconds. The Timer Standby mode is cancelled.

WHY: The inserted cassette has its safety tab removed.
WHAT TO DO: Eject that cassette. Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and re-insert it. Press TIMER again. ☞p.9.

NO PROGRAM

- Displayed for 5 seconds. The Timer Standby mode is cancelled.

WHY: There are no preset programs in memory.
WHAT TO DO: Check the programmed data and re-program it as necessary. Press TIMER again.

••

Other Messages

The following messages may also be encountered during timer-recording.

TIMER (with current hour)

WHY: The recorder is in the Timer Standby mode. This is the normal display you should see when you press the TIMER button.

TIMER REC

WHY: Normal display while timer-recording is in progress.

TAPE END

WHY: If this and "TIMER REC" are alternately displayed, it means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.

SET CLOCK

WHY: This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet.
WHAT TO DO: Set the clock. ☞p.10.

- If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.

The following messages may be encountered when the TRANS button of the remote control is pressed. ☞p.27.

PROGRAM (with number)

- Displayed for 2 seconds.

WHY: The transferred data has been stored in that program number. (The smallest vacant program number is always selected automatically.)

TRANS ERR

- Displayed for 5 seconds.

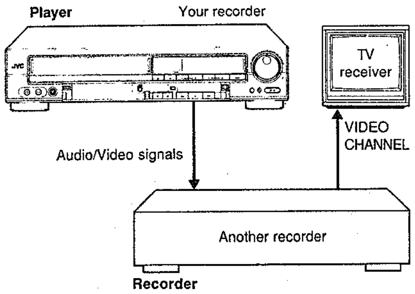
WHY: Data was not successfully transferred. The program may have been incorrectly preset, or the recorder's clock has not been set.
WHAT TO DO: Check the LCD program, and re-program as necessary. Transfer the correct data.

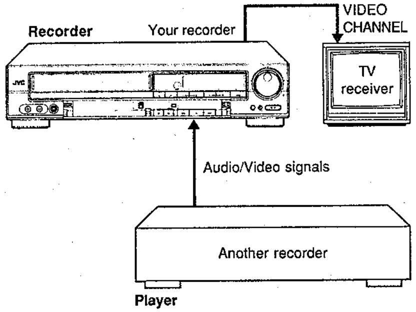
PROG FULL

- Displayed for 5 seconds.

WHY: All the recorder's timer programs (1 – 7) are preset.
WHAT TO DO: Cancel unnecessary programs, and transfer again.

For Editing





Editing To/From Another Recorder

Your video recorder can be used as either the recording deck or the source player when editing tapes.

PREPARATION

1. Connect the player's AUDIO/VIDEO connector to the recorder's AUDIO/VIDEO connector.
2. Load the source tape in the player and the recording tape in the recorder.
3. Engage the recorder's AUX mode.

OPERATION

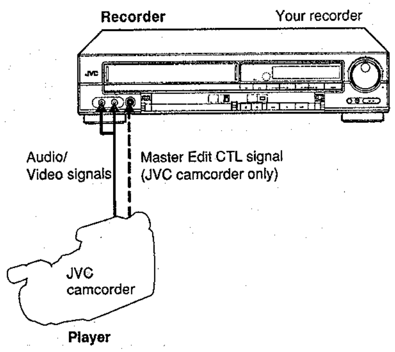
4. Put the recorder in the Record-Pause mode.
5. Play back the source tape to search for a scene to be edited.
   - Use the JOG/SHUTTLE controls.
6. Press both the player's and recorder's PLAY button simultaneously.
7. Press the recorder's PAUSE button to stop editing.
8. Repeat steps 5 through 7 to continue editing.

NOTES:

- When using your recorder as a playback deck, select the TAPE DUB mode with the remote's PICTURE button. ☞ p.21
- If you do not want to record on-screen messages on the edited tape, cancel the on-screen display. ☞ p.15

NOTES:

- Suitable leads can be obtained from your dealer.
- Connections made to the front panel Video and Audio inputs automatically override the rear panel AUDIO/VIDEO input connection. If you wish to edit with another machine connected to the rear input connector, make sure that there is nothing connected to the front connectors.



Editing From A JVC Camcorder

Tape-to-tape editing is also possible using a JVC camcorder (equipped with playback facility) as the player and your recorder as the recording deck. In this case, the recorder's PAUSE terminal can be used to accept Master Edit Control commands from the camcorder.

PREPARATION

1. Connect the camcorder's AV OUT connector to the recorder's front panel V(Video) and A(Audio) connectors.
2. Connect the AV output cable's mini-plug to the PAUSE terminal of the recorder.

- If the camcorder is equipped with the Master Edit Control system, you can control the recorder using the camcorder's controls. See the camcorder's instruction manual for operating procedures.
- With this connection, you can also use the camcorder as a video camera for direct recording onto the recorder's tape. Put the recorder in Record-Pause and use the camcorder's start/stop trigger to start and pause recording. (For direct recording with a separate video camera, a camera adapter is necessary.)

For Convenience

Setting The Clock Forward Or Backward By One Hour (Daylight Saving Time Adjustment)

TO ADVANCE THE TIME BY ONE HOUR

1. Press the remote control's SUMMER TIME ADJUST button and quickly release.
2. Press the TRANS button.
   - The revised time is transferred to the recorder.

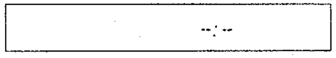
TO SET THE TIME BACK BY ONE HOUR

1. Keep SUMMER TIME ADJUST pressed for more than 2 seconds.
2. Press the TRANS button.
   - The revised time is transferred to the recorder.

Turning Off The Display

The fluorescent display on your JVC recorder can be switched off at any time.

1. Press the DISPLAY OFF button on the recorder. The lights in the display will go out.

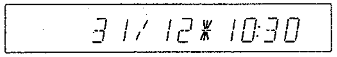


2. To restore the display, press the DISPLAY OFF button again.

Locking The Recorder's Controls

To avoid unwanted operation and prevent accidental recording or other interference, use the Child Lock function.

1. Press the remote control's OPERATE (VTR) button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   - The Child Lock indicator (⁑) will appear between the date and time on the display panel.



2. Child Lock is automatically deactivated when you switch the recorder's power on again with the remote's OPERATE (VTR) button.
   - Pressing the TIMER button during timer-recording also deactivates the Child Lock mode.

NOTES:

- While the Child Lock mode is engaged, make sure you keep your remote control in a safe place inaccessible to children.
- Timer-recording is possible in the Child Lock mode. After timer-recording has been performed, the Child Lock mode remains in effect.

Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to your remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals (indicated by " A CODE " on the LCD) because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.

1. Unplug the recorder's power cord from the AC outlet.
2. Press the A/B CODE button. (" B CODE " will appear on the LCD.)
3. Plug the power cord back into the AC outlet. Do not use other remote controls at this stage.
4. Turn the recorder power on using the remote control's OPERATE (VTR) button. The recorder will now only respond to B code signals.

CAUTION:

Some TV sets may malfunction in response to the B mode. If this happens switch back to the A mode.

For Reception

Changing Preset Channels

TO CHECK STORED REAL CHANNELS

Use the remote control. First turn on the recorder.

1. Press TV PROGRAM (VTR) to select the channel position of the stored real channel whose number you want to know. (e.g. PR. 10)
2. Press CH.

STORED 10

REAL Ch26

- This indicates that channel position 10 stores real channel 26.

3. To check other channel positions, press TV PROGRAM (VTR).
   - Either "STORED xx" or "SKIPPED xx" will appear, followed by "REAL Ch xx" or "REAL CC xx".
4. The Channel Set mode will be cancelled in about 10 seconds unless you call up another channel position. Do not press the CH button; this alternates between Ch and CC bands.

TO DELETE STORED CHANNELS

Use the remote control. First turn on the recorder.

1. Press TV PROGRAM (VTR) to select the channel position you want to skip. (e.g. PR. 10)
2. Press CH.

STORED 10

3. Press SKIP.

SKIPPED 10

REAL Ch26

- This indicates that real channel 26 has been deleted from channel position 10.

TO STORE NEW CHANNELS

Use the remote control. First turn on the recorder.

1. Press CH.

REAL Ch26

2. Press CH again and keep it pressed until the real channel number starts blinking.
3. Press CH to change the band between Ch and CC, if necessary.
4. Press numeric keys to input the number of the real channel you want to store. (e.g. Ch 26.)

REAL Ch26

SKIPPED 10

5. Press numeric keys to input the number of a vacant channel position (e.g. 20), and hold the key for the 2nd entry until the display changes to "STORED 20".

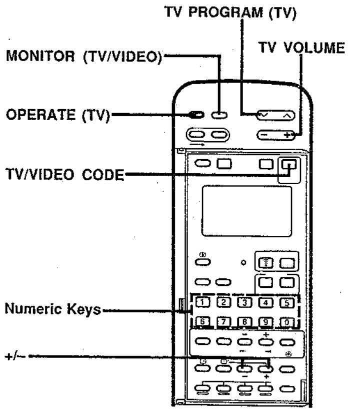
STORED 20

REAL Ch26

- The Channel Set mode will be cancelled automatically after about 60 seconds.

Using The Remote Control For TV Operation

The provided remote control can operate the basic functions of your television. In addition to JVC televisions, other manufacturers' televisions listed here can also be controlled by setting the remote control to the corresponding TV code. The remote control's default code is "1", which enables control of most JVC televisions without re-setting. If your JVC television is equipped with 10+ and 20+ buttons on its remote control, you have to set the TV code to "2".



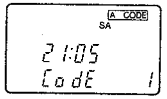
CODE	TV BRAND NAME
1	JVC
2	JVC
3	BRANDT NORDMENDE SABA TELEAVIA TELEFUNKEN THOMSON
4	FERGUSON
5	PHILIPS
6	BLAUPUNKT GRUNDIG
7	SONY
8	PANASONIC
9	PANASONIC
0	GRAETZ ITT LUXOR SALORA SELECO

IMPORTANT

Although the provided remote control unit is compatible with JVC televisions, as well as many TV models manufactured by others, it is possible that the provided remote control will not work with your TV, or in some instances, will have limited function capability.

Setting The TV Code

1. Press TV/VIDEO CODE for longer than 2 seconds.
   - The LCD will show the current code (initially "Code 1").
2. Press a numeric key corresponding to the code number for your TV's brand.
   - The LCD will return to the clock mode after 2 seconds.



NOTES:

- TV code setting is not possible unless the clock has been set.
- Whenever you replace batteries in the remote control or initialise the LCD memory (☞p.5), it is necessary to re-set the TV code, if your television is not a Code 1 JVC TV.

To Control Your Television With Buttons Exclusively For TV

- Press OPERATE (TV) to turn the TV power on.
- Press MONITOR (TV/VIDEO) to switch the TV between TV and VIDEO (or AV) mode.
- Press TV PROGRAM (TV) to select the TV's channel.
- Press TV VOLUME to adjust the TV's sound volume.

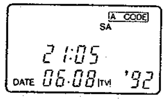
NOTES:

- The TV PROGRAM (TV) button does not function with televisions using Code 3.
- The MONITOR (TV/VIDEO) button does not function with televisions using Code 4.
- With some televisions, the OPERATE (TV) button functions only to turn the TV power off, and the MONITOR (TV/VIDEO) button functions only to switch the TV to the VIDEO (AV) mode.

To Control Your Television With Additional Buttons

The numeric keys can also be used to select the TV's channel by setting the remote control to the TV mode.

1. Press TV/VIDEO CODE.
   - "TV" will appear on the LCD.
2. Use the numeric keys and +/– to select the TV's channel while "TV" is on the LCD.
   - With televisions using Code 1, 4, 5, 7, 8 or 9, both the +/– buttons correspond to the 1-digit/2-digit entry switching button (often labelled -/--) of your TV's remote control.
   - With televisions using Code 2, 6, or 0, the – button corresponds to the 10+ button, and the + button, to the 20 + button of your TV's remote control.



NOTE:

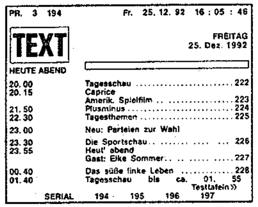
The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.

Using The Optional Teletext Adapter

Teletext services have established themselves as one of the most flexible sources of information and broadcast schedules available to TV and video users. Your video recorder is ready to take full advantage of these services. By connecting an optional teletext adapter (☞ Specifications), you'll not only be able to view the vast number of teletext pages now available, you'll be able to transfer broadcast schedule data directly to your recorder's timer for instant, automatic timer programming. You'll also be able to make full use of your remote control's capabilities, with all the dual or triple function controls working as intended. Here are just a few examples of features available to you when you connect an optional teletext adapter.

TELETEXT

- View broadcast teletext pages.
- Several page access modes are available for quick, convenient location of pages you want to see.
- You can program the video recorder's timer directly using TV schedule pages.


PR. 3 194 Fr. 25. 12. 92 16 : 05 : 46

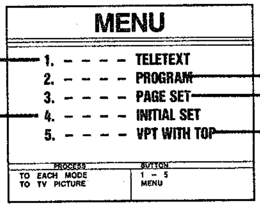
TEXT

FREITAG
25. Dez. 1992

HEUTE ABEND

20.00	Tagesschau	222
20.15	Caprice Amerik. Spielfilm	223
21.50	Plusminus	224
22.30	Tagesthemen	225
23.00	Neu: Parteien zur Wahl	
23.30	Die Sportschau	226
23.55	Heut' abend Gast: Elke Sommer	227
00.40	Das süße linke Leben	228
01.40	Tagesschau bis ca. 01. 55 Testtafeln »	

SERIAL 194 195 196 197



INITIAL SET

LANGUAGE

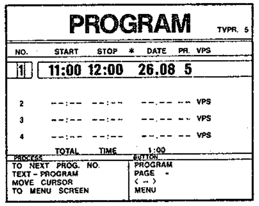
- Select one of four languages (English, German, Italian, or Swedish) for on-screen messages.

CLOCK ADJUST

- Set the recorder's clock manually using the numeric keys.
- Set the recorder's clock automatically by reading teletext time information.

PROGRAM

- Check timer recording data on the colour on-screen display.
- Program the timer manually with the remote's numeric keys.


PROGRAM TVPR. 5

NO.	START	STOP	*	DATE	PR.	VPS
1	11:00	12:00		26.08	5	
2	--:--	--:--		--.--	--	VPS
3	--:--	--:--		--.--	--	VPS
4	--:--	--:--		--.--	--	VPS

TOTAL TIME 1:00

PROCESS	BUTTON
TO NEXT PROG. NO.	PROGRAM
TEXT – PROGRAM	PAGE -
MOVE CURSOR	< – >
TO MENU SCREEN	MENU

PAGE SET

- You can preset favourite or often-referred-to pages for immediate access.
- Up to four pages can be stored on each of the numeric keys, for a total of 40 pages.

VPT WITH TOP

- TOP automatic teletext timer programming.
- Convenient colour-coded page access.
  "5.– – – – VPT WITH TOP" only appears when the video recorder's tuner is tuned to a station transmitting TOP broadcasts. (Applicable only in certain areas.)

ATTENTION

Some buttons on the remote control unit are labelled with pictograms indicating the functions that can be used when the VPT adapter is connected. When reading the VPT adapter's instruction manual, keep in mind the correspondence between these pictograms and the labels referred to in the instruction manual:

⊡ : LARGE/NORMAL
? : REVEAL
◷ : TIMED PAGE
⊞ : RESET
⊕ : HOLD
◩ : MIX
→ : ROTATE

Display Panel Messages

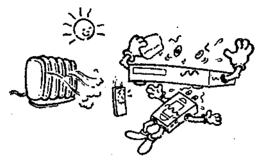
Displayed Message	When It Appears, What It Means
During Clock Set	
31/12 10:30	"31st December, 10:30" is successfully transferred.
During Program Set	
PROGRAM 1	"Program 1" has been opened/ set/cancelled/successfully transferred.
DATE 31/12	"31st December" is input for the recording start date.
REPT 31/12	"Repeat" command is input for recording of a weekly serial.
DAILY 31/12	"Daily" command is input for recording of a daily serial.
START 11:00	"11:00" is input for the recording start time.
STOP 12:30	"12:30" is input for the recording stop time.
VPS PR. 10	"10" is input as the channel to be recorded, with VPS ON.
VPS ON	""VPS" status is changed from OFF to ON. Displayed for 2 seconds.
VPS OFF	"VPS" status is changed from ON to OFF. Displayed for 2 seconds.
During Channel Set	
REAL Ch 02	"Real Channel 02 in Ch band" is stored.
REAL CC 02	"Real Channel 02 in CC band" is stored.
REAL Ch :15	"Real Channel 15 in Ch band" is received, but not stored.
SKIPPED-10-	Channel position "10" is currently called up, and ready for input.
STORED 10	Received real channel has been stored in channel position "10".
FINE - Ch 15	"Fine tuning" is engaged for "Real Channel 15 in Ch band"
During Normal Operation	
PLAY	Normal playback is in progress.
STOP	Tape has been stopped.
STILL	A still picture is being viewed.
FF	Fast-forwarding.
REW	Rewinding.
REC 10	Recording "Channel 10".
REC AUX	Recording "External Input".
REC 1:30	Recording with the Off Timer set to shut off in 1 hour 30 minutes.
PAUSE 10	Recording is paused.
TIMER REC	Timer-recording is in progress.
FWD SLOW	Slow motion playback is in progress.
FWD SEARCH	Forward search is in progress.
REV SEARCH	Reverse search is in progress.
SKIP	Skip Search is in progress.
BLANK	Blank Search is in progress.
INDEX +9	Searching for the 9th index code in the forward direction.
INDEX −4	Searching for the 4th index code in the reverse direction.
INDEX MARK	Index code is being marked.
REPEAT	Repeat playback is in progress.
PR. 10	Channel 10 is being received.
VPS PR.10	A VPS programme is being received on channel 10.
AUX INPUT	External input mode.
EJECT	Cassette is being ejected.
During Next Function Memory	
REW – OFF OFF	Will rewind to the beginning and then shut off automatically.
REW – PLAY PLAY	Will rewind to the beginning and then start playback automatically.
REW – TIMER TIMER	Will rewind to the beginning and then enter the timer mode automatically.
REW – EJECT EJECT	Will rewind to the beginning and then eject the tape automatically.
Clock and Counter Displays	
4:30:15	Tape counter reading of "4 hours, 30 minutes, 15 seconds".
M 4:30:15	Same as above with Counter Memory ON.
REMAIN 2:24	2 hours and 24 minutes of recording time remaining on the tape.
31/12 10:30	It is 31st December, 10:30. (Standard date/time display when recorder power is turned off)
31/12 ⚷10:30	Same as above with Child Lock ON.
TIMER 10:30	It is 10:30 and the Timer Standby mode is engaged.
SET CLOCK	The clock is not set. Please set it.
SET CLOCK ⚷	Same as above with Child Lock ON.
TIMER REC TAPE END	End of tape was reached during timer-recording.
--:--	Display is turned OFF.
Error Messages	
NO CASS	There is no cassette in the recorder.
NO REC TAB	The cassette's record tab is removed.
NO PROGRAM	No program has been preset.
TRANS ERR	Transfer is rejected due to wrong data.
PROG FULL	Transfer is rejected due to no vacant programs.
Other Messages	
GOOD MORNING GOOD AFTERNOON GOOD EVENING	Automatic greetings when the recorder is turned on.
GOOD-BYE GOOD NIGHT	Automatic greetings when the recorder is turned off.

NOTES:

This list represents the various types of messages your recorder is capable of generating. Actual messages displayed by your recorder (esp. if date, time, channel, tape counter reading, or other variables are involved) will differ slightly from those listed here.

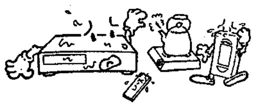
Precautions

Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.

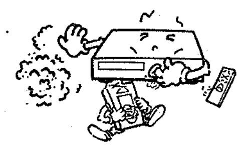


Avoid extreme heat and direct sunlight

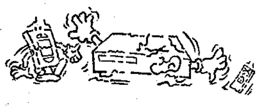
Avoid extreme cold



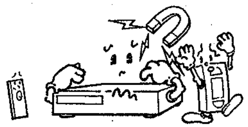
Avoid extreme humidity



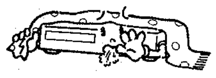
Avoid dust



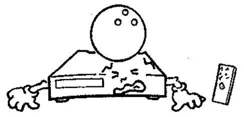
Avoid places subject to vibrations



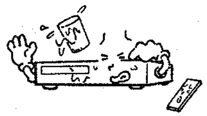
Avoid strong magnetic fields



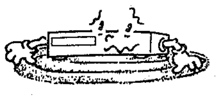
Do not block the recorder's ventilation openings



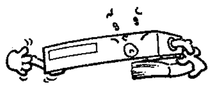
Do not place anything heavy on the recorder or remote control



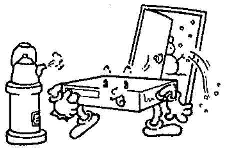
Do not place anything which might spill on top of the recorder or remote control



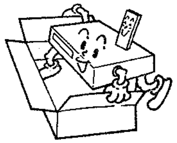
Do not place the recorder on cushions, pillows, or thick carpeting



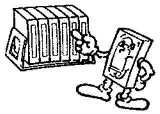
Use the recorder in a stable, horizontal position only



Beware of moisture condensation
Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.



When transporting
- Be sure to remove cassette from recorder before packing
- Avoid violent shocks to the recorder during packing and transport



Place cassettes in cassette cases and store vertically

Specifications

GENERAL

Power requirement : AC 220 – 240 V∿, 50/60 Hz
Power consumption : 24 W
Temperature : 5°C to 40°C (Operating)
: –20°C to 60°C (Storage)
Operating position : Horizontal only
Dimensions (WxHxD) : 435 x 95 x 345 mm
Weight : 5.2 kg
Format : VHS PAL standard
Tape width : 12.65 mm
Tape speed : 23.39 mm/sec
Maximum recording time : 240 min. with E-240 video cassette

VIDEO

Signal system : PAL colour and CCIR monochrome signals, 625 lines/50 fields
Recording system : Rotary two-head helical scan system with a slant double-azimuth combination video head
Input : 0.5 to 2.0 Vp-p, 75 ohms, unbalanced
Output : 1.0 Vp-p, 75 ohms, unbalanced
Signal-to-noise ratio : 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution : 250 lines

AUDIO

Recording system : Longitudinal track
Input : –3.8 dBs, (CENELEC standard)
more than 50 k-ohms, unbalanced
Output : –3.8 dBs, (CENELEC standard)
less than 1 k-ohm, unbalanced
(100 k-ohms, load)
Frequency range : 70 Hz to 10,000 Hz

TUNER

Tuning system : Frequency synthesized tuner
TV channel storage capacity : 48 positions (+ AUX position)
Channel coverage : VHF 47 – 111 MHz
111 – 300 MHz
302 – 470 MHz
(Hyper band for PAL)
UHF 470 – 862 MHz
Aerial output : UHF channel 36
(adjustable 32 – 40)

TIMER

Clock reference : Quartz-crystal
Programme capacity : 1-year/8-programme timer
Memory backup time : 60 min.

ACCESSORIES

Provided accessories : Aerial cable
Infrared remote control unit
"R6" battery x 2

Optional accessories (EG) : VPV adapter VU-V120E
VPT adapter VU-V140E

Optional accessories (E) : VPS adapter VU-V110E
VPV adapter VU-V120E
VPS/VPV adapter VU-V100E
VPT adapter VU-V140E
VPS/VPT adapter VU-V150E

Design and specifications subject to change without notice.

In Case Of Difficulties

POWER AND TAPE TRANSPORT PROBLEMS

Symptoms	Check points
No power is applied to the recorder.	■ Is the power cord disconnected? — Connect it.
Clock is functioning properly, but the recorder cannot be powered.	■ Is "TIMER" displayed on the display panel? — Press the TIMER button to extinguish the display.
Tape does not run during recording.	■ Is "PAUSE" displayed on the display panel? — Press the PLAY button to extinguish the display.
Tape stops during rewind or fast-forward.	■ Is the C. MEMORY button pressed? — Press again to make "M" disappear from the display panel.
Tape will not rewind or fast-forward.	■ Is the tape already fully rewound or fast-forwarded? — Check the cassette.

RECORDING PROBLEMS

Symptoms	Check points
Recording cannot be started.	■ Is a cassette loaded? ■ Is the safety tab on the cassette removed? — Reseal the slot with adhesive tape.
TV broadcasts cannot be recorded.	■ Has "AUX" been selected? — Set to the desired channel.
Tape-to-tape editing is not possible.	■ Is the camcorder or another video recorder correctly connected? ■ Are all necessary power switches turned ON? ■ Has "AUX" been selected? — Set to "AUX".
Camera recording is not possible.	■ Is the camcorder correctly connected? ■ Has "AUX" been selected? — Set to "AUX".
Timer recording is not possible.	■ Have you set the clock correctly and programmed the timer correctly? — Check once again. ■ Is "TIMER" displayed on the display panel? — If not, press the TIMER button to display "TIMER".

PLAYBACK PROBLEMS

Symptoms	Check points
Playback picture does not appear while the tape is running.	■ If you are using RF OUT connection, is the TV receiver's channel selector set to the correct video channel? — Set it to the RF converter channel (UHF 36). (☞p.8) ■ If you are using AV connection, is the TV receiver set to the AV mode? — Set it to the AV mode.
Playback is repeated.	■ Is the REPEAT switch set to either FULL or INDEX? — Set it to OFF.
Noise appears during visual search.	■ This is normal.
Noise appears during normal playback.	■ Is the automatic tracking mode engaged? — Try manual tracking. (☞p.20)
Noise appears during slow motion playback.	— Try manual tracking. (☞p.20)
Noise appears during still playback.	— Press Pause/Still a few times to remove the noise bars from the screen.
Playback picture is blurred or interrupted while TV broadcasts are clear.	■ Video heads may be dirty. — Head cleaning is necessary. Consult your JVC dealer. (☞p.39)

OTHERS

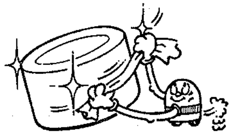
Symptoms	Check points
Whistling or howling is heard from TV during camera recording.	■ Move VideoMovie or camera's microphone away from TV or reduce TV sound volume.
Remote control's LCD clock time cannot be transferred to the recorder.	■ Is "TIMER" displayed on the display panel? — Press the TIMER button to extinguish the display.
Some channels are skipped over when scanning channels.	■ Those channels are preset to be skipped over. If you need them, restore them. (☞p.32)
Channel cannot be switched.	■ Is recording in progress? — Press the PAUSE button, change the channel, and press the PLAY button.
Remote control does not function.	■ Are the batteries discharged? — Replace with new ones. ■ Is the A/B CODE indicator showing the proper code for the recorder being operated? — Press the A/B CODE button for the correct setting.
The remote control's time display changed to "0:00" and is blinking.	— The remote control's batteries are exhausted. Replace all the batteries and set the clock again.

ATTENTION:
This recorder contains microcomputers. External electronic noise or interference could cause malfunctioning. In such cases, switch the power off and unplug the power cord. Then plug it in again and switch on. Take out the cassette. After checking the cassette, operate the unit as usual.

Special Note On Head Cleaning

Accumulation of dirt and other particles on the video heads may cause the playback picture to become blurred or interrupted. Although this model is equipped with a built-in head cleaner which automatically cleans the heads, reducing the likelihood of dirty heads, if such troubles are encountered please consult the nearest JVC dealer.

Auto Head Cleaner



A built-in head cleaner automatically cleans the video heads and head drum whenever a tape is loaded or unloaded to reduce head clogging.

SECTION 1
DISASSEMBLY AND MECHANISM ADJUSTMENTS

1.1 DISASSEMBLY

1.1.1 Top cover

1. Refer to Fig. 1-1-1 and set for the EJECT (Stop) mode and disconnect VCR from AC power.
2. Take out 5 screws Ⓐ. To remove the top cover, slide in direction of arrow and lift away.

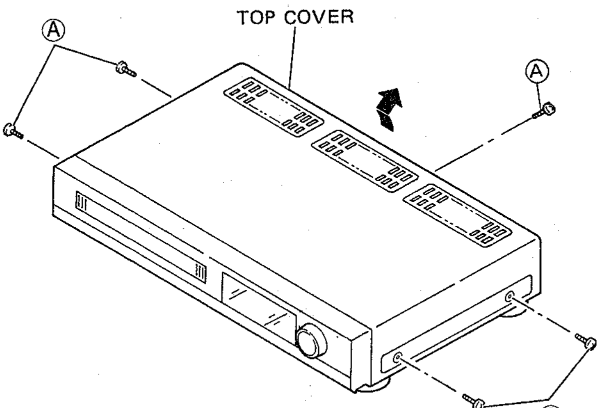


Fig. 1-1-1

1.1.2 Front panel assembly

1. Remove the top cover.
2. Carefully disengage 3 tabs Ⓑ of the front panel assembly from the upper side of the chassis.
3. Refer to Fig. 1-1-2 and pull the front panel assembly forward you to disengage 3 tabs Ⓒ of the front panel assembly from the bottom side of the chassis, then remove the front panel assembly.

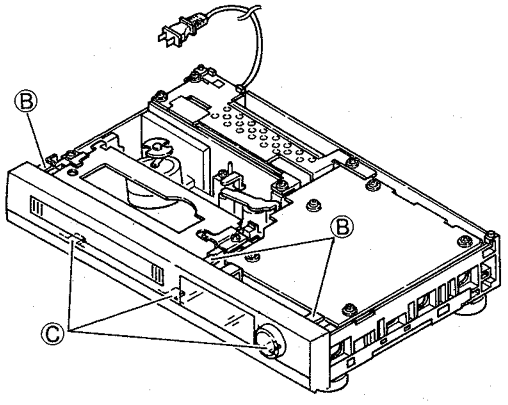


Fig. 1-1-2

1.1.3 Bottom cover

1. Remove the top cover.
2. Refer to Fig. 1-1-3 and take out 5 screws Ⓓ and disengage 4 claws Ⓔ from the bottom of the chassis.
3. Disengage the bottom cover from the bottom of the chassis slide indirection of arrow and disengage 2 tabs Ⓕ.

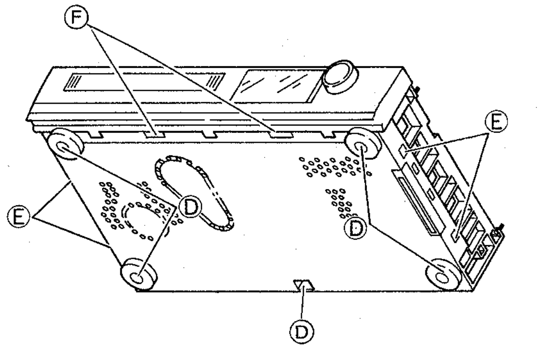


Fig. 1-1-3

1.1.4 Main board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-4 and take out 5 screws Ⓖ and 1 screw Ⓗ from main board assembly.
3. Remove the main board assembly in the upward direction.

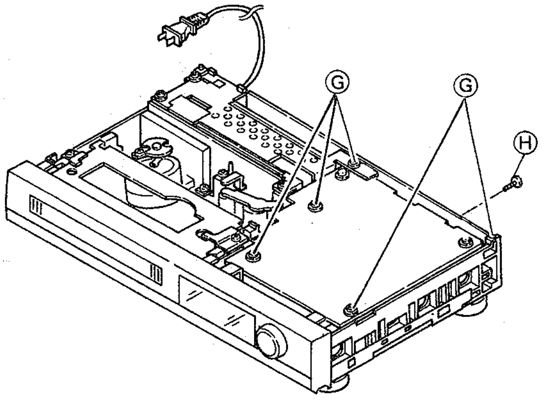


Fig. 1-1-4

1.1.5 Cassette housing

1. Remove the top cover and main board assembly.
2. Refer to Figs. 1-1-5 and 1-1-6.
   Take out 4 screws Ⓙ that secure the cassette housing. Disengage 3 tabs Ⓚ of the front panel and pull the front panel forward where it does not interfere with removing the cassette housing.
3. Remove the cassette housing in the upward direction.

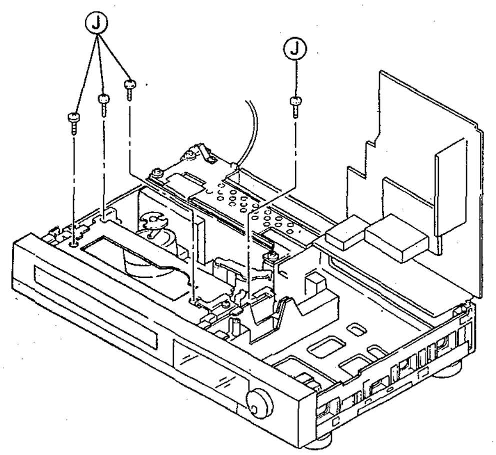


Fig. 1-1-5

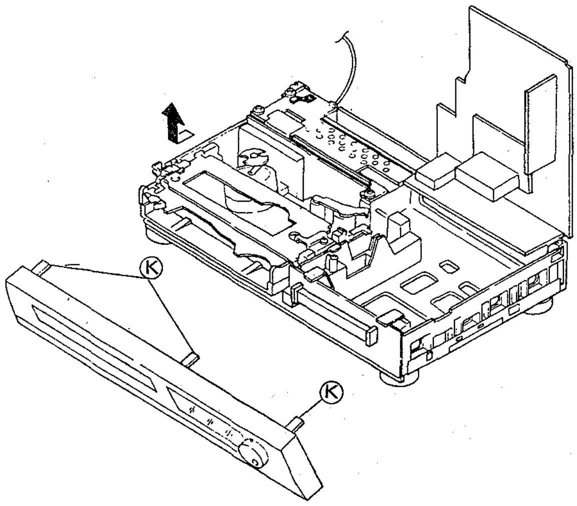


Fig. 1-1-6

1.1.6 Cassette housing installation

1. On the main deck, observe the positional relationships of the parts indicated in Fig. 1-1-7.
   If necessary, turn the loading motor by hand to obtain these positions.

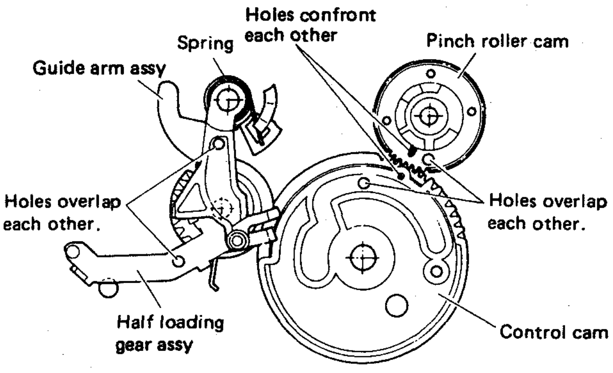

Holes confront each other
Spring
Pinch roller cam
Guide arm assy
Holes overlap each other.
Holes overlap each other.
Half loading gear assy
Control cam

Fig. 1-1-7

2. Refer to Fig. 1-1-8 and confirm that the clutch is engaged.
   If necessary, press the lever indicated by the arrow to where the clutch is locked.

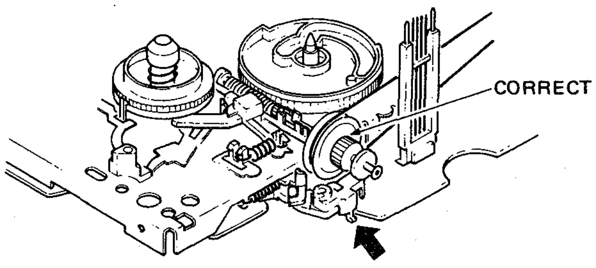


Fig. 1-1-8

3. Check that the cassette housing is in the eject state (internal holder of the cassette housing is locked in raised position).
   Set the cassette housing into place and secure with 4 screws.
4. Install the front panel as shown in Fig. 1-1-9 and re-engage the tabs. Supply power and use a spare cassette to check for normal loading and eject operations.

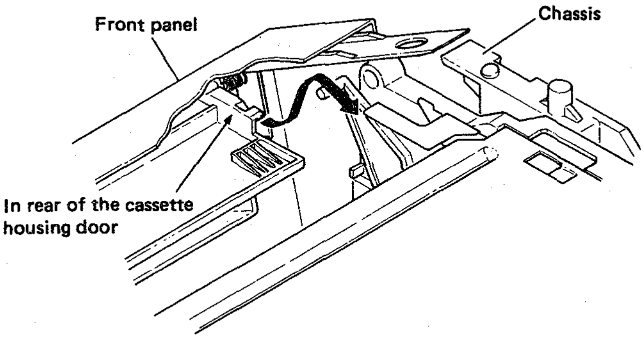
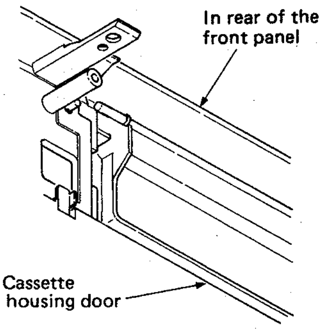

Front panel
Chassis
In rear of the cassette housing door

Fig. 1-1-9

5. Disconnect VCR from power, then reinstall the main board assembly and top cover.

1.1.7 Cassette housing door

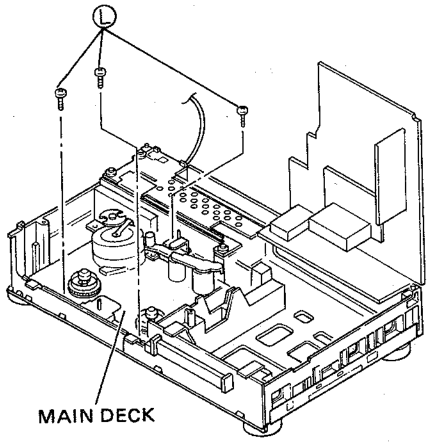
1. Remove the top cover and front panel assembly.
2. Refer to Fig. 1-1-10, with a lift of cassette housing door by hand, bend center of the cassette housing door toward you, then pull out the left end from the cassette housing.
3. Refer to Fig. 1-1-10 and use care regarding the torsion spring, then pull out the right end of the cassette housing door to move it.



Fgi. 1-1-10

1.1.8 Main-deck

1. Remove the top cover, front panel assembly and main board assembly.
2. Refer to Fig. 1-1-11 and take out 3 screws Ⓛ from the main-deck assembly.
3. Remove the main-deck assembly in the upward direction and disconnect a connector CN1 from the DECK TERMINAL board, connectors CN1, CN2 from the Pre/Rec board, connector CN1 from the A/C head board, connector CN1 from the Loading MDA board and connector CN1 from the Drum MDA board.



1.1.9 Switching regulator board assembly

1. Remove the top cover.
2. Refer to Fig. 1-1-12 and take out 4 screws Ⓜ from the switching regulator board assembly.
3. Remove the switching regulator board assembly in the upward direction.

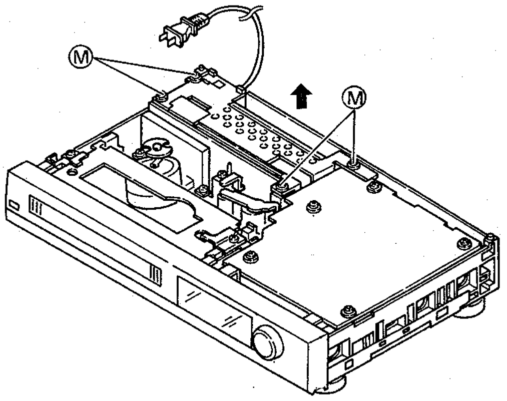


Fig. 1-1-12

1.2 MECHANISM ADJUSTMENTS

1.2.1 Precautions

1. Disconnect mainframe from AC power before soldering.
2. Avoid imparting stress to wires when disengaging connectors.
3. Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4. Use care not to damage tabs, claws, etc. during repairs.
5. Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6. When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.

1.2.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1. Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2. Connect pins 2 and 3 of Main board connector CN601.
3. Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

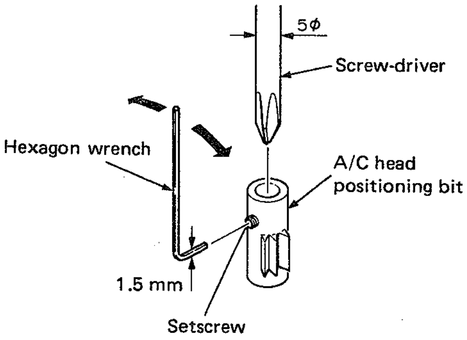


Fig. 1-2-1 A/C head positioning tool

1.2.3 Manually removing cassette tape

In event of electrical system failure that prevents the tape from being unloaded, the tape can be removed manually by the following procedure. Refer to Figs. 1-3-1, 1-3-2 and 1-3-3.

1. Disconnect power cord from AC outlet.
2. Turn the loading motor by hand so that the control cam rotates clockwise. This retracts the pole base assembly to the unloading position.
3. Continue turning to where the guide arm and half loading gear assemblies shift to beneath the cassette.
4. Turn the clutch assembly at the rear of the deck to absorb slack tape within the cassette.
5. Again turn the loading motor in the same direction to raise the cassette and remove it.

1.2.4 Test equipment

The following special tools and fixtures are required for mechanism adjustment.

1. Alignment tapes: MH-2
   Stairstep signal is employed for interchangeability checks and adjustments.
2. Torque gauge : PUJ48075-2
   Measures tape take-up torque.
3. Back tension cassette gauge : PUJ48076-2
   Measures tape tension at the supply side.
4. A/C head positioning bit : PTU94010
   - Shifts the head base for adjusting the control head position.
   - **The installation of a A/C head positioning bit on the screw-driver.**
     Refer to Fig. 1-2-1. Set screw-driver into the A/C head positioning bit where it does not interfere with adjusting the A/C head adjusting boss (position the screw-driver point 6 ± 2 mm from point of the A/C head positioning bit). Slightly tighten the setscrew by hexagon-wrench (1.5 mm).
5. Roller driver : PTU94002
   Turns the guide roller for adjusting FM linearity.

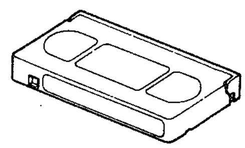
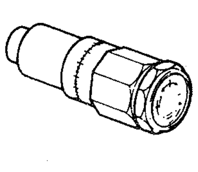
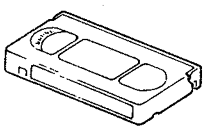
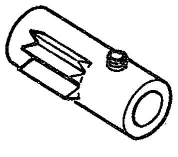
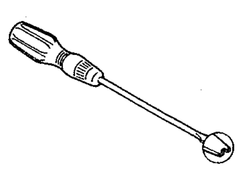
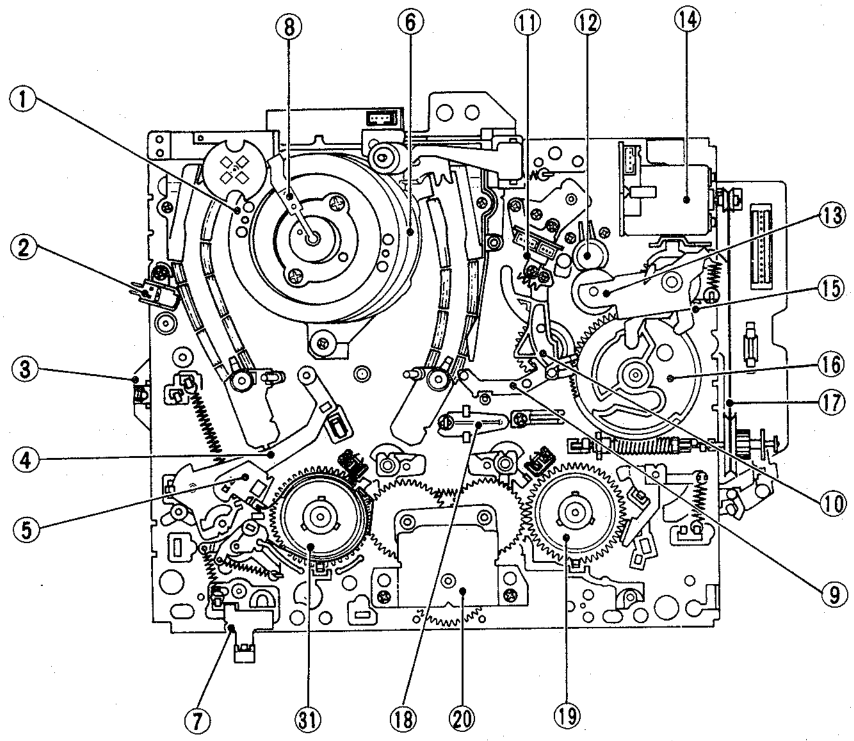
Alignment tapes 1	Torque gauge 2	Back tension cassette gauge 3	A/C head positioning bit 4	Roller driver 5
				

Fig. 1-2-2 Test equipment

1.3 MAIN MECHANISM PARTS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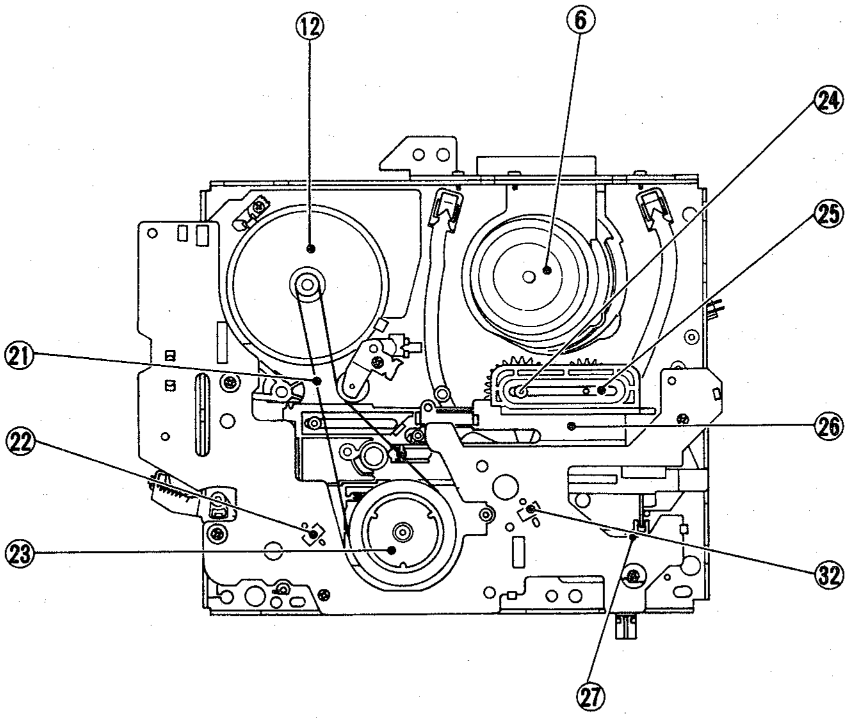
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Fig. 1-3-2 Bottom view of main-deck

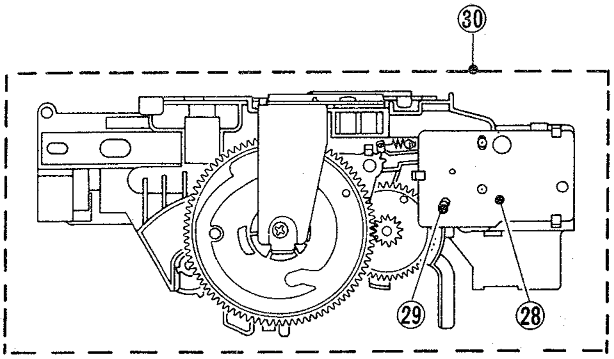


Fig. 1-3-3 Side view of cassette housing

A. Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

B. Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).

For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.

Before oiling, clean with alcohol.
Apply one or two drops of oil. Avoid excess oil.

1. Table 1-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 1-1

2. Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

C. Main mechanical parts

See Fig.s 1-3-1, 1-3-2 and 1-3-3.

No.	Symbol	Parts Name	See Section
1	M32A	Upper drum assy	1.5.1
2	M44	Full erase head	
3	51Q1	End sensor	
4	M41	Tension arm assy	1.5.4
5	M42	Tension band assy	1.5.4
6	M32C	Lower drum motor assy	1.5.2
7	M461	REC safety switch	
8	M32D	Brush assy	
9	M449	Half loading gear assy	1.5.5
10	M447	Guide arm assy	1.5.5
11	M48	A/C head	1.5.3
12	M422	Capstan motor	
13	M442	Pinch roller arm assy	
14	M434	Loading (Mode) motor assy	
15	M446	Pinch roller cam	1.5.5
16	M438	Control cam	1.5.5
17	M437	Loading belt	
18	M460	LED holder	
19	M430	Reel disk (take-up)	
20	M424	Idler gear unit	
21	M429	Timing belt	
22	51PS1	Take up reel sensor	
23	M426	Clutch unit	1.5.6
24	M433	Take up loading arm assy	1.5.7
25	M432	Supply loading arm assy	1.5.7
26	M439	Plate assy	1.5.7
27	M462	Slide encorder (S3)	
28	56PHS3	Cassette sensor	
29	56Q2	Start sensor	
30	M36	Cassette housing assy	
31	M470	Reel disk (supply)	
32	51PS2	Supply reel sensor	

- Symbol interpretation example

M32A: M = Exploded view symbol, 32A = Ref. No.

56 Q2: 56 = Board No., Q2 = Ref. No.

1.4 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced at when required.

1.4.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.

Also note that rubber parts may deform in time, even if the set is not used.

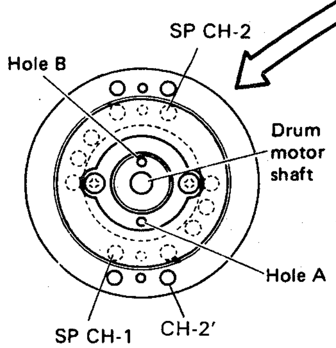
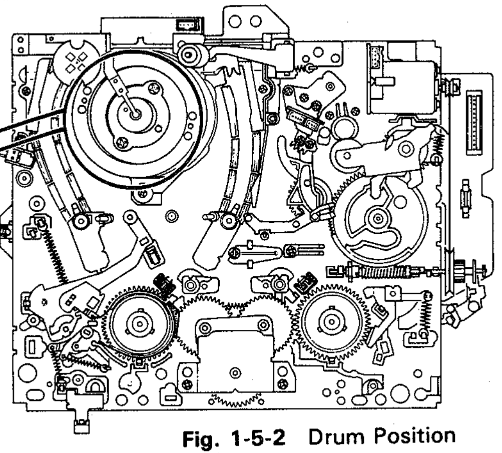
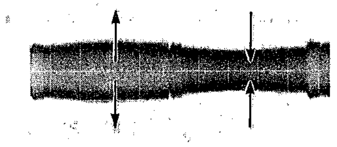
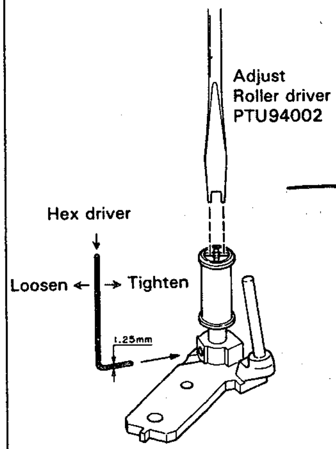
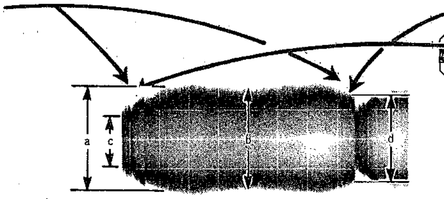
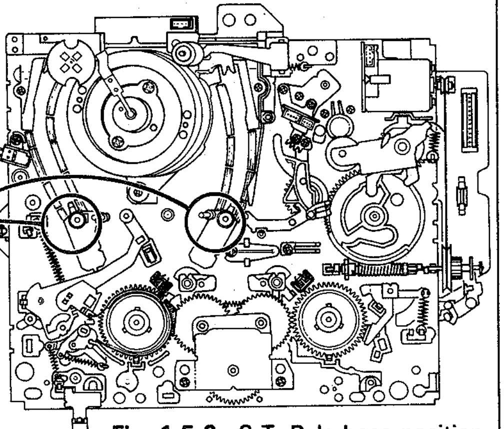
System	No.	Parts Name	Symbol No.	Periodic servicing schedule (operation hours)								
				250	500	750	1000	1250	1500	1750	2000	Overhaul
Tape Transport	1	Upper drum	M32A	★	★	☆	○	○	○	○	○	●
	11	A/C head	M48	★	★	★	○	○	○	○	○	●
	13	Pinch roller	M442	★	★	★	○	○	○	○	○	●
	2	Full erase head	M44	★	★	★	○	○	○	○	○	●
	4	Tension arm	M41									●
	6	Lower drum	M32C				○	○	○	○	○	●
	12	Capstan (shaft)	M422	★	★	★	★	★	★	★	★	●
	9	Half loading gear	M449									●
	10	Guide arm	M447									●
Drive	12	Capstan motor	M422				○	○	○	○	○	●
	17	Loading Belt	M437				○	○	○	○	○	●
	21	Reel Belt	M424				○	○	○	○	○	●
	19	Take-up reel disk	M430				○	○	○	○	○	●
	31	Supply reel disk	M470				○	○	○	○	○	●
	23	Clutch assy	M426								○	●
	14	Loading motor	M434				○	○	○	○	○	●
		Worm clutch assy	M436								△	●
	26	Plate assy	M439								△	●
Others	5	Tension band	M42				○				○	●
	8	Brush	M32D				○				○	●

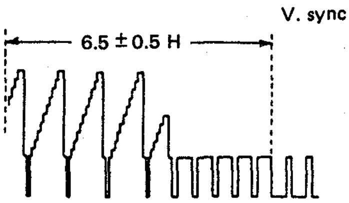
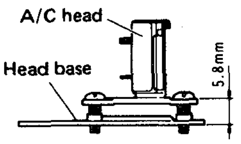
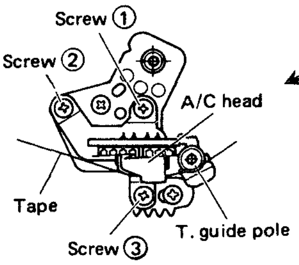
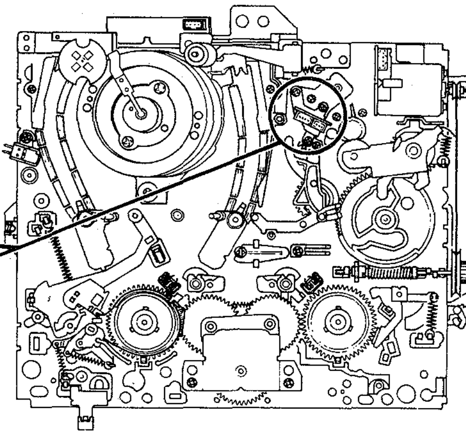
★ : Cleaning
☆ : Cleaning (or Replacement if necessary)
△ : Lubrication
No: Refer to Main mechanical parts

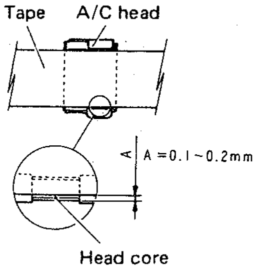
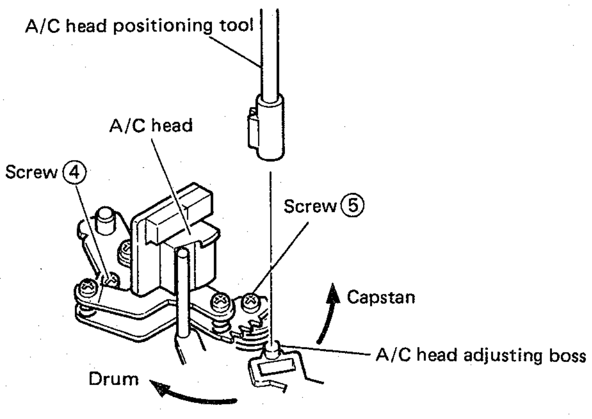
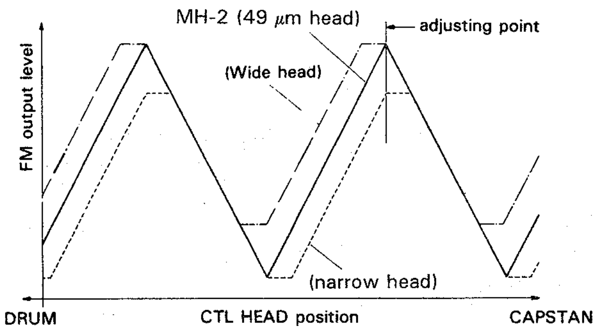
▲ : Lubrication (or Replacement if necessary)
● : Replacement
○ : Inspection or Replacement if necessary

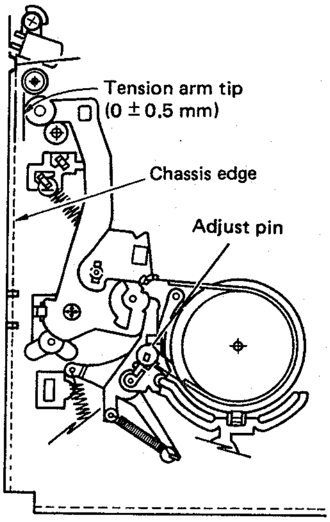
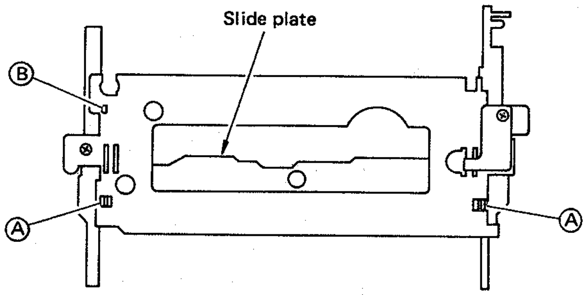
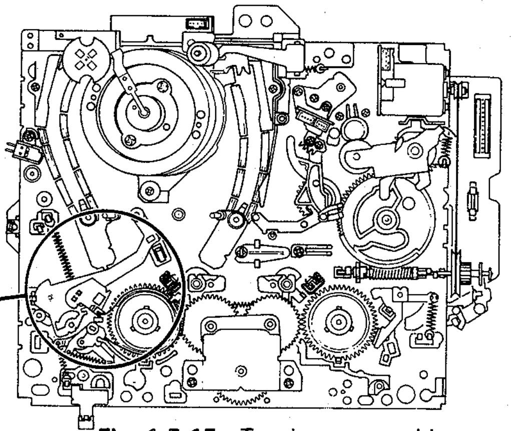
Table 1-4-1 Approximate maintenance schedule

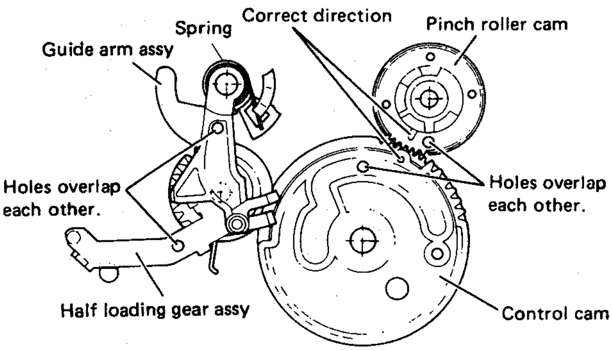
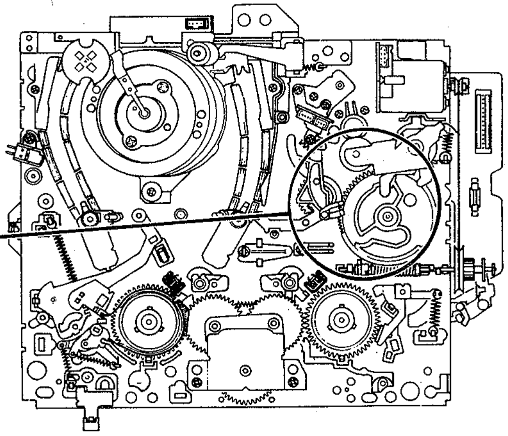
1.5 MAIN PARTS REMOVAL AND REPLACEMENT

No.	Item	Checkpoints	Adjustment and Checks
1	Upper drum assembly •Symptoms: FM signal absent, intermittent or weak on one channel; large difference in channel output levels •Cause: Worn or damaged video heads, poor response, etc.  SP CH-2 Hole B Drum motor shaft Hole A SP CH-1 CH-2' **Fig. 1-5-1** DRUM TOP VIEW	 **Fig. 1-5-2** Drum Position Mounting direction See Fig. 1-5-1. (Symptom: no picture)	After replacing, observe that upper drum hole A is opposite the motor axis from lower drum hole B.
		Axis wobble See Fig. 1-5-2. (Symptom: jitter, poor FM linearity) PB FM: Main board TP206 DRUM FF: Main board TP411	Record and playback in SP mode. Confirm absence of large difference between channels. (Fig. 1-5-3)  **Fig. 1-5-3** Axis wobble
	 Adjust Roller driver PTU94002 Hex driver Loosen Tighten 1.25mm **Fig. 1-5-4** S.T. Pole base	FM linearity check See Fig. 1-5-5. (Symptom: vertical sync absent, picture noise) PB FM: Main board TP206 DRUM FF: Main board TP411  **Fig. 1-5-5** FM linearity $\frac{b}{a} \geqq 0.7, \frac{c}{a} \geqq 0.65, \frac{d}{a} \geqq 0.65$	 **Fig. 1-5-6** S.T. Pole base position 1) Play stairstep signal of the MH-2 Alignment Tape. Confirm absence of obvious FM waveform loss and that operating the Tracking yields the optimum point. 2) Refer to Fig. 1-5-4, adjust for loss at the left edge (drum entry) of the FM waveform by turning the guide roller of the supply pole base. Similarly, adjust for loss at the right edge (drum exit) by turning the guide roller of the take-up pole base. **Note:** ***If FM loss occurs on both channels and cannot be corrected by adjusting the guide rollers, the lower drum needs replacement.***

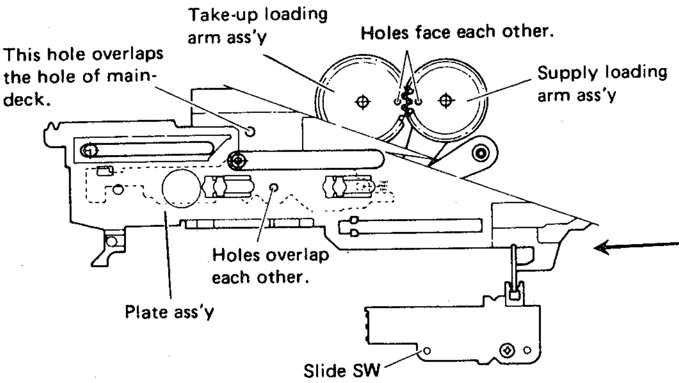
No.	Item	Checkpoints	Adjustment and Checks
	PB switching point •Symptom: switching noise at picture bottom.	TP210 (VIDEO OUT)  **Fig. 1-5-7** PB Switching Point	1) Connect an oscilloscope to TP210. 2) Set the MH-2 alignment tape into the cassette housing. Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP411 (DRUM FF) of the main board. 4) Adjust R420 to position the trigger point 6.5 H ±0.5 H from V. sync as shown in Fig. 1-5-7.
2	Lower drum assembly •Symptoms: Poor FM linearity, noisy rotation, jitter •Cause: Lead and bearing wear	Check FM linearity and switching point.	See above upper drum assembly items.
		Check control head phase (X value) Symptom: tracking error PB FM: Main board TP206 DRUM FF: Main board TP411	1) Play stairstep signals of MH-2 Alignment Tape. Engage the Tracking Preset mode by pressing the + and – buttons simultaneously in the onscreen mode. Confirm that the same maximum FM waveform level is obtained as when the tracking is adjusted manually. 2) Refer to the A/C head adjustments.
3	**A/C head**  **Fig. 1-5-8** Temporary height  Screw ① Screw ② A/C head Tape T. guide pole Screw ③ **Fig. 1-5-9** Inclination/Azimuth/ Height adj.		 **Fig. 1-5-10** A/C HEAD position
		Temporarily set height as indicated in Fig. 1-5-8.	Set the height as indicated in Fig. 1-5-8 to facilitate tape transport checks and adjustments.
		Tilt (forward inclination) See Fig. 1-5-9. (Symptom: audio level varies greatly.)	1) Run tape, turn screw ① counterclockwise to where slight curling of the tape occurs at the lower flange of the take-up guide roller. 2) Then slowly turn the screw clockwise to where the curling ceases.
		Azimuth See Fig. 1-5-9. (Symptoms: audio low level or noisy) Audio output: Main board AUDIO OUT	1) Play stairstep signal (with audio 6 kHz) of the MH-2 Alignment Tape. Observe audio output signal with oscilloscope. 2) Turn screw ② and adjust for maximum audio output level.

No.	Item	Checkpoints	Adjustment and Checks
	 **Fig. 1-5-11** Height Adj	Height See Fig.s 1-5-9 and 1-5-11. (Symptom: low audio and control signal levels)	1) Run tape and observe the control head area. 2) Turn screws ①, ② and ③ by small and equal amounts until 0.1 to 0.2 mm of the head core bottom can be seen. **Note:** ***If difficult to observe, play stairstep signal of MH-2 Alignment Tape and adjust for maximum audio output and control pulse level.***
		FM linearity	Refer to upper drum assembly items. If adjustment is major, again check the azimuth.
	 A/C head positioning tool A/C head Screw④ Screw⑤ Capstan A/C head adjusting boss Drum **Fig. 1-5-12** CTL head phase  **Fig. 1-5-13** CTL head phase **Note:** ***Trigger the oscilloscope externally signal from TP411 (DRUM FF). Use (+) trigger for MH-2 alignment tape.***	Control head phase See Fig. 1-5-12 PB FM: Main board TP206 FF: Main board TP411 Digital tracking off	1) Play stairstep signal of MH-2 Alignment Tape and observe the FM waveform. Set for Digital tracking off by pressing the "V CH" and "Λ CH" buttons simultaneously in the playback mode. 2) Loosen screws ④ and⑤. Set the A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 1-5-12. 3) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 1-5-13. 4) Tighten screw ⑤ . Remove the tool and tighten screw ④.

No.	Item	Checkpoints	Adjustment and Checks
4	Tension arm assembly Tension band assembly  Tension arm tip (0 ± 0.5 mm) Chassis edge Adjust pin **Fig. 1-5-14** Tension arm assy  **Fig. 1-5-16** Cassette housing	Tension pole position See Fig. 1-5-14. (Symptom: poor FM waveform response)	 **Fig. 1-5-15** Tension arm position 1) Remove video cassette tape and set for the playback mode as following steps. 2) Disconnect VCR from AC. Slightly rotates the loading motor counterclockwise by hand, then press the lock level portion Ⓐ of the cassette housing by hand as shown in Fig. 1-5-16. 3) Move the raised portion of the cassette housing slide plate to fully forward by hand with loading motor. At this time, again press the lock level portion Ⓑ of the cassette housing slide plate to lower the cassette housing (internal holder of the cassette housing is locked in lowered position). 4) Cover the cassette LED with opaque material (insulated tape with black). 5) Connect VCR to AC. Press the power button on the Front panel and set for the playback mode. 6) Turn the eccentric adjust pin to align the edge of the chassis with the tension arm tip as shown in Fig. 1-5-14.
		Back tension (Symptom: skew)	1) When the tension pole position is correctly adjusted, the back tension will assume the correct value. 2) Use the Back Tension Cassette Gauge and set for the playback mode. Confirm reading of 30 to 43. 3) Changing the tension pole position in order to vary the back tension will cause adverse effects elsewhere.

No.	Item	Checkpoints	Adjustment and Checks
5	Pinch roller cam Control cam Half loading gear assembly Guide arm assembly		Set mechanism to Eject mode (internal holder of the cassette housing is locked in raised) position.
	 Correct direction Spring Pinch roller cam Guide arm assy Holes overlap each other. Holes overlap each other. Half loading gear assy Control cam **Fig. 1-5-16** Control/Pinch roller cam		 **Fig. 1-5-17** Control cam position
		Important: Do not remove or disturb parts other than those mentioned. See Fig. 1-5-16.	1) When installing the pinch roller cam, overlap the largest hole of the gear portion with the hole of the deck. 2) Set the control cam on the deck with the hole of the groove overlapped with the hole of the deck. Observe that the small hole of the control cam and the ridge of the pinch roller cam are aligned. (If the control cam does not fit readily, shift the rear plate assembly within the range of play.) 3) Install the half loading gear assembly with the hole overlapped with the hole of the deck. Secure with E-ring. 4) Install the guide assembly over the spring and with the hole overlapping that of the deck. Engage the spring correctly.
		Cassette housing assembly	Install the cassette housing assembly with the mechanism in the Eject mode. Also observe that the inner holder of the housing is raised and locked.
6	Clutch assembly	Take-up torque (Symptom: inadequate take-up torque)	1) Remove cassette housing and set for playback mode (see Section 1.2). 2) Set torque gauge on the take-up reel disk. Gradually relax your grip on the gauge and read the needle indication at the point the gauge begins to rotate with the disk. Confirm indication of 60 to 100.

No.	Item	Checkpoints	Adjustment and Checks
7	Take-up loading arm assembly Supply loading arm assembly Plate assembly		Note: • *Set mechanism to the Eject or Stop mode before removing these parts.* • *The flange of the plastic rivet securing the loading arm assembly and the pole base assembly can be damaged by attempting to remove it directly. Press the loading arm assembly firmly to prevent motion. Then use a narrow-shafted tool to press the rivet from the shaft end to remove it.*
		Mounting position alignment • Remove the tension arm assembly to facilitate operation. See Fig. 1-5-18.	1) Set the supply and take-up loading arm assemblies so that the holes of the gear portions are aligned, then secure to the pole base assemblies with rivets. 2) Shift the plate assembly and install with the holes of the upper and lower components overlapped.
		Slide switch See Fig. 1-5-18.	Be sure to engage the slide switch slider with the edge of the plate assembly.



Take-up loading arm ass'y
This hole overlaps the hole of main-deck.
Holes face each other.
Supply loading arm ass'y
Holes overlap each other.
Plate ass'y
Slide SW

Fig. 1-5-18

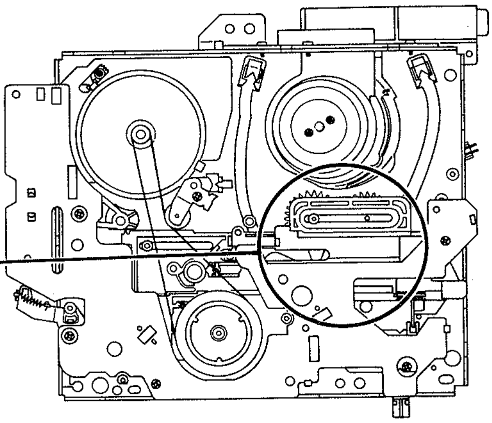


Fig. 1-5-19
T.S. Loading arm position

SECTION 2
ELECTRICAL ADJUSTMENTS

2.1 PREPARATION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

2.1.1 Required test equipment

1. Color television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Audio oscillator
5. Audio voltmeter
6. Digital voltmeter
7. Signal generator: RF/IF sweep/marker
8. Signal generator: PAL color bar, stairstep, video sweeper
9. Signal generator: Audio multiplex TV signal generator
10. Recording tape
11. Alignment tape: MH-2
12. Presetting unit: PTU94008.

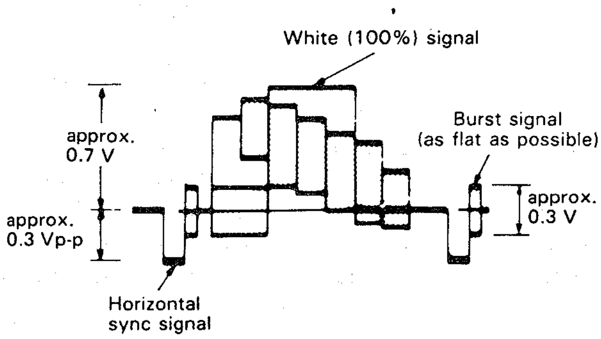

White (100%) signal
approx.
0.7 V
Burst signal
(as flat as possible)
approx.
0.3 Vp-p
approx.
0.3 V
Horizontal
sync signal

Fig. 2-1-1 Color bar signal of pattern generator

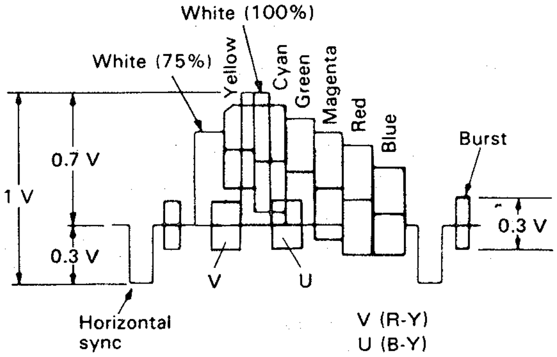
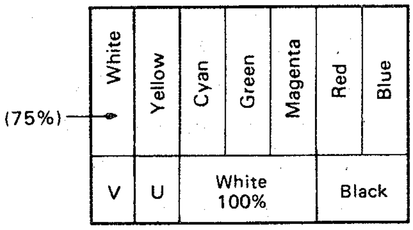

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst
0.7 V
1 V
0.3 V
0.3 V
V
U
Horizontal
sync
V (R-Y)
U (B-Y)

Fig. 2-1-2 Color bar signal waveform



White	Yellow	Cyan	Green	Magenta	Red	Blue
V	U	White 100%			Black	

Fig. 2-1-3 Color bar pattern

2.1.2 Check and adjustment steps

The check and adjustment steps are provided in the following in the form of charts. For clarity, the nomenclature used in the charts is outlined below.

No.	Checks and adjustments are numbered in the recommended sequence in which they are to be performed.
Item	Name assigned to the particular check and adjustment step.
Check Point	Location to which measuring instrument (oscilloscope unless otherwise noted) is to be connected.
Adjustment Parts	Variable component (resistor, capacitor, etc.) to be adjusted in this step. Dash (—) indicates check only.
Signal & Mode	• Input signal required to perform adjustment. Dash (—) indicates that special signal is not required. • Equipment operating mode at time of check or adjustment.
Color bars	Color bars signal as video input.
Stairstep	Stairstep signal as video input.
1 kHz	1 kHz sinewave as audio input signal.
MH-2 color bars	Color bars segment of MH-2 alignment tape.
MH-2 stairstep	Stairstep segment of MH-2 alignment tape,
MH-2 1 kHz	1 kHz audio signal segment of MH-2 alignment tape.
MH-2 RF sweep	RF sweep segment of MH-2 alignment tape.
E-E	Power on and machine in Stop mode.
REC	Recording mode
PB	Playback mode
SEARCH	Search (FWDS and REVS) playback mode
SLOW	Slow motion playback mode
STILL	Pause during playback mode
SP mode	SP recording speed
Description	This column provides an explanation of the step, notes and adjustment values, and reference to waveforms where applicable.

2.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the 03 MAIN board.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	5V DC output voltage	• REC	• TUNER • SP	•Q806-B •TP803 (GND)	•R811 (SWD 5V)	1) Connect a digital voltmeter between Q806-B and TP803. 2) Record in the TUNER mode, adjust R811 for 5.30±0.05 V.

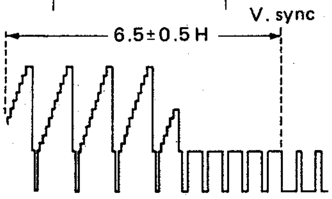
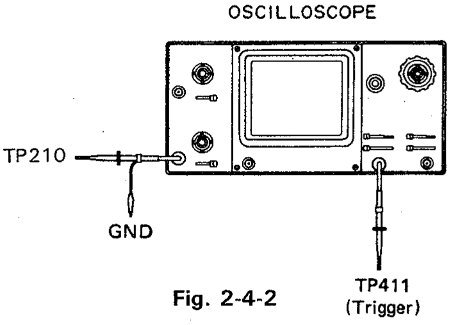
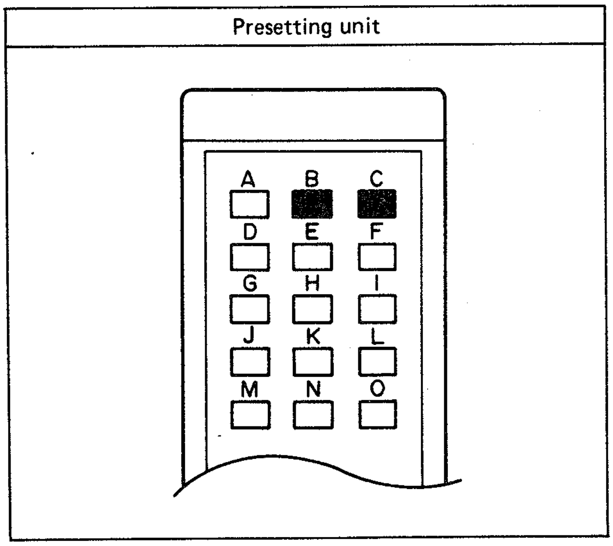
2.3 TIMER CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the 21 T/D/S board.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Clock	• EE	• AUX	•IC1-16	•C6 (TIMER CLOCK)	**Note:** ***For below adjustments use 10:1 probe with input capacitance lessthan 100 pf.*** 1) Disconnect VCR from AC. Connect a frequency counter between IC1-16 and GND. 2) Short IC1-8 to GND, then short the leads of capacitor C3 once in order to reset IC1. 3) Connect VCR to AC. All FDP Segments are on. 4) Adjust C6 for 2048.000±0.002 Hz (488.2808 to 488.2818 μs).

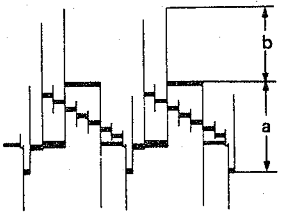
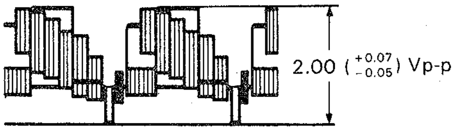
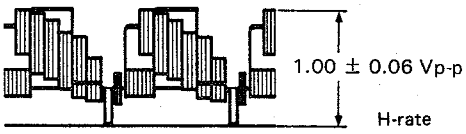
2.4 SERVO CIRCUIT

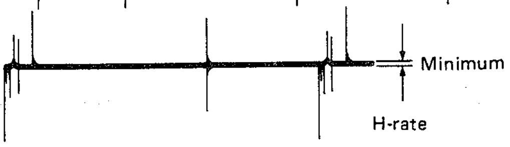
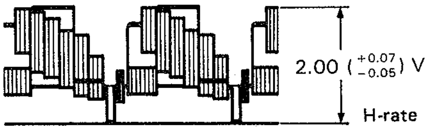
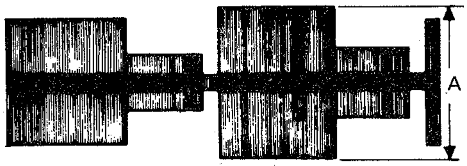
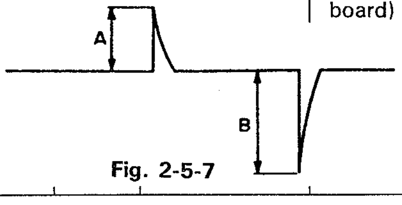
Note: ***Unless otherwise specified, all test points and adjustments are located on the 03 MAIN board.***

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	SP PB switching point	• PB	•MH-2 stairstep •SP •Trigger slope (–) •Auto tracking off  Fig. 2-4-1	•TP210 (VIDEO OUT)	•R420 (SP PB SW POINT)	1) Connect an oscilloscope to TP210. 2) Play back the stairstep segment of MH-2 alignment tape. 3) Trigger the oscilloscope externally (– slope) with the signal from TP411. 4) Adjust R420 to position the trigger point 6.5±0.5 H from V. sync.  Fig. 2-4-2
2	SP slow tracking preset	• REC then PB (slow)	•SP •Tuner or color bar  	•TV monitor	•Presetting unit (PTU-94008)	**Note:** ***Set VCR to A mode by remote controller.*** 1) Set recording video tape into the cassette housing. 2) Receive a colour broadcast or supply a colour bar signal to VIDEO IN. 3) Record a colour broadcast or colour bar signal in the SP mode. 4) Play back recorded signal in the FWD and REV slow mode and set the tracking control of the FRONT panel to the center position by simultaneously pressing the (∧) and (∨) TV PROG buttons. 5) Observe the display one a monitor-TV and adjust for optimum noise condition (best tracking) by depressing "B" or "C" buttons of presetting unit as required. 6) Depress the STOP button on the FRONT panel. 7) Confirm that the bar noise is not visible on the monitor in the slow mode.

2.5 VIDEO CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the 05 VIDEO unit board.*

<table>
<tr><th>No.</th><th>Item</th><th>Mode</th><th>Signal & Setting</th><th>Measurement Point</th><th>Adjustment Parts</th><th>Adjustment Procedure</th></tr>
<tr><td colspan="7">**IMPORTANT: Item 1,2,3 and 4**
1. Ordinarily avoid performing these adjustments. It should be performed only if IC1 of the VIDEO UNIT board has been replaced.
2. To adjust, replace fixed resistor with variable resistor, then adjust as required.</td></tr>
<tr><td>1</td><td>EE level & White clip</td><td>• EE</td><td>• Colour bar</td><td>• CN207-15 (Main board)
• IC1-22</td><td>• R60 (EE Y LEVEL)
• R64 (WHITE CLIP)</td><td>1) When IC1 of the VIDEO UNIT board is replaced, it may also be necessary to replace R60 and R64 with adjustable resistors.
2) Confirm 2.00 ($^{+0.07}_{-0.05}$) Vp-p EE level at CN207-15 and white clip of 90±4% at IC1-22. If necessary, replace R60 with NVP1301-103NU and R64 with NVP1301-332NU.
3) Supply a colour bar signal to VIDEO IN, connect one channel of a dual trace oscilloscope to CN207-15 and the other channel to IC1-22.
4) Alternately adjust R60 and R64 for 2.00 ($^{+0.07}_{-0.05}$) Vp-p at CN207-15 and white clip of 90±4% at IC1-22.</td></tr>
<tr><td></td><td></td><td colspan="4">
a : b = 100 : 90
Fig. 2-5-1 White clip</td><td>
Fig. 2-5-2 VIDEO OUT</td></tr>
<tr><td>2</td><td>Carrier & Deviation</td><td>• EE</td><td>• AUX
• No signal</td><td>• CN206-9 (Main board)</td><td>• R41 (CARRIER)</td><td>1) When IC1 of the video unit board is replaced, it may also be necessary to replaced R41 and R42 with adjustable resistors.
2) Play back a colour bar segment of MH-2 and confirm 1.00 (±0.06) Vp-p Y level at VIDEO OUT (75Ω load). If necessary, replace R41 with NYVP1301-223NU and R42 with NVP1301-103NU.
3) Without an incoming signal. Terminate VIDEO OUT with TV-monitor (75Ω load), connect a frequency counter to CN206-9 on the MAIN board.
4) Adjust R41 for 3.80±0.04 MHz.
5) Play back a colour bar segment of MH-2, and confirm 1.00 (±0.06) Vp-p at VIDEO OUT. If necessary, redplace R17 with NVP1301-222NU.</td></tr>
<tr><td></td><td colspan="5">**IMPORTANT:**
Ordinarily avoid performing this adjustment. It should be performed only if IC1 of the VIDEO UNIT board has been replaced or if significant waveform distortion and S/N deterioration occur during recording and playback due to deficient adjustment of the carrier set and deviation.</td><td></td></tr>
<tr><td></td><td></td><td>• REC then PB</td><td>• Colour bar
• SP
• AUX</td><td>• TP210 Video out (Main board)</td><td>• R42 (DEVIATION)</td><td>6) Record and play back a colour bar signal. If necessary, before recording, adjust R42 so that the Y level becomes 1.00 (±0.06) Vp-p at VIDEO OUT during playback mode.</td></tr>
<tr><td></td><td></td><td colspan="4">
Fig. 2-5-3 Carrier and deviation</td><td></td></tr>
</table>

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
3	YNR NC balance  Fig. 2-5-4 YNR NC balance	• EE	• Colour bar • AUX	• IC1-9	• R56 (NC BAL)	1) When IC1 of the video unit board is replaced, it may also be necessary to replace R56 with adjustable resistor. 2) Supply a colour bar signal to VIDEO IN, connect an oscilloscope to IC1-9 on the VIDEO UNIT board. 3) Confirm minimum DC step difference. If necessary, replace R56 with NVP1301-152NZ. 4) Adjust R56 for minimum DC step difference.
4	PB Y level  Fig. 2-5-5 PB Y level	• REC then PB	• Colour bar • SP • AUX	• CN207-15 (Main board)	• R17 (PB Y LEVEL)	1) When IC1 of the video unit board is replaced, it may also be necessary to replace R17 with adjustable resistor. 2) Record and play back a colour bar signal, confirm 2.00 $(^{+0.07}_{-0.05})$ Vp-p Y level at CN207-15. If necessary, replace R17 with NVP1301-222NU. 3) Connect oscilloscope to CN207-15. 4) Record and play back a colour bar signal, adjust R17 for 2.00 $(^{+0.07}_{-0.05})$ Vp-p at CN207-15.
5	REC colour level and Ch balance	• PB	• MH-2 colour bar • SP • Auto tracking off	• IC1-41	• R215 (Main board) (SP REC COLOUR)	1) Connect an oscilloscope to IC1-41 and observe colour signal level. 2) Set the MH-2 alignment tape into the cassette housing, play back the colour bar segment of MH-2 alignment tape. 3) Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "Λ" and "V" TV PROG buttons. 4) Adjust by pressing the "+" and "−" tracking buttons of the Front panel for maximum level of the colour waveform and make a note of the higher colour level "A". 5) Press the STOP button on the FRONT panel and eject the MH-2 alignment tape.
	 Fig. 2-5-6 REC colour level	• REC then PB				6) Set recording video cassette into the cassette housing. Supply a colour bar signal to VIDEO IN. 7) Trigger the oscilloscope externally with the signal from TP411 (DRUM FF) of the Main board. Use (−) trigger for CH1 and (+) triger for CH2. 8) Record a colour bar signal in the SP mode. 9) Play back recorded colour bar signal. Set the tracking of the FRONT panel to the Auto tracking off position by simultaneously pressing the "Λ" and "V" TV PROG buttons and confirm 110 ± 5% of the noted colour level at IC1-41. IF necessary, before recording, adjust R215 so that the higher level channel becomes 85 ± 5% of the noted level "A" during playback as shown in Fig. 2-5-6. At this time, confirm that the channel level difference is within 3 dB. **Note:** ***Repeat the above step (9) several times.***
6	SECAM DET  Fig. 2-5-7	• EE	• SECAM colour bar	• TP244 (Main board)	• L282 (SECAM DET) (Main board)	1) Connect an oscilloscope to TP244. 2) Adjust L282 so that A and B are related as follows: A : B = 3 : 4

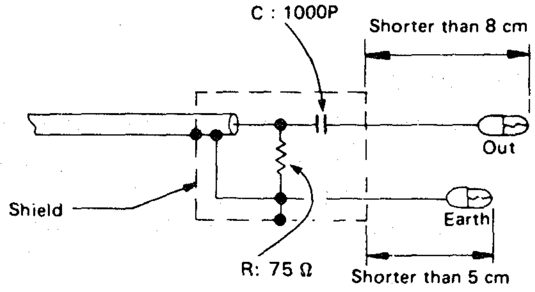
2.6 AUDIO CIRCUIT

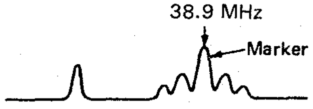
Note: *Unless otherwise specified, all test points and adjustments are located on the* [0][3] ***MAIN board.***

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	PB level	• REC then PB	•AUX •SP	•Audio out	•R21 •R24	1) Insert recording video cassette to the cassette housing. 2) Supply an audio signal (−8 dBs/1 kHz) to Audio IN and video signal to Video IN. 3) Record the audio signal with the video signal in the SP mode and play back recorded audio signal. 4) Confirm that the PB audio signal level is −6 ±2.5 dBs. 5) If the level is higher than −3.5 dBs, remove R21. If the level is lower than −8.5 dBs, remove R24.

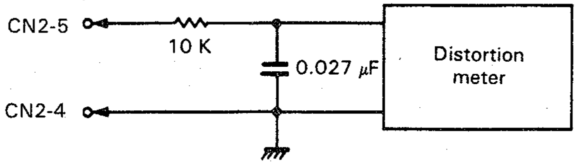
2.7 TUNER/IF CIRCUIT

Note: *Unless otherwise specified, all test points and adjustments are located on the* [0][8] ***TUNER/IF board.***

<table>
<tr><th>No.</th><th>Item</th><th>Mode</th><th>Signal & Setting</th><th>Measurement Point</th><th>Adjustment Parts</th><th>Adjustment Procedure</th></tr>
<tr><td colspan="7">Equipment required:
1. Oscilloscope
2. IF sweep signal generator with suitable markers (PIF, etc.)
3. Sweeper probe (sweep signal supply cable) as shown below.


Sweeper probe
Fig. 2-7-1</td></tr>
<tr><td rowspan="2">1</td><td rowspan="2">VCO</td><td rowspan="2">• EE</td><td>•Tuner


VCO and sweep signal (beat)
Fig. 2-7-2</td><td>•IC1-17</td><td>•T1</td><td>1) Use a sweeper probe as shown in Fig. 2-7-1 and connect the sweep generator output to pin 1 of SAW 1.
Adjust the sweep gain so that the waveform does not distort as observed with the oscilloscope.
Connect the oscilloscope to pin 17 of IC1 (VIDEO DET OUT) and adjust T1 to align the waveform with the frequency marker as shown in Fig. 2-7-2.</td></tr>
<tr><td>•Tuner
•TV broadcast</td><td>•TV monitor</td><td>•T1</td><td>Alternate methjod:
1) Receive a colour broadcast.
2) Adjust T1 to obtain a fine picture on the monitor.</td></tr>
</table>

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
• **Before the following adjustments:** 1. Connect a cable to ANT IN and terminate TV OUT at 75 Ω. 2. Set a TV channel signal generator as follows. Video: 65 dBμ/75 Ω, colour bar 87.5% modulation Audio: 55 dBμ/75 Ω, 1 kHz ± 50 kHz deviation						
2	RF AGC	• EE	• Tuner • TV broadcast	• TV monitor	• R72 (RF AGC)	1) Connect the oscilloscope to IF terminal of U/V Tuner (Front end). Adjust R72 for maximum level, then again adjust R72 for −8 dB again. **Alternate method:** **Note:** ***Adjust R72 (RF AGC) to correct for excess noise in the picture or when streaky cross interference occurs due to strong electrical fields.*** 1) Adjust R72 to minimize noise or streaks on the TV monitor. 2) Check for absence of abnormality on all channels.
3	SOUND DET	• EE	• Tuner • TV broadcast  Fig. 2-7-3	• CN2-5	• T3 (FM DET)	1) Use a adjustment circuit as shown in Fig. 2-7-3, and connect a distortion meter as shown in Fig. 2-7-3. 2) Adjust T3 for minimum distortion (less than 2.0%). **Alternate method:** 1) Receive a colour broadcast. Connect an oscilloscope to CN2-5. 2) Adjust T3 for maximum level at audio sound.

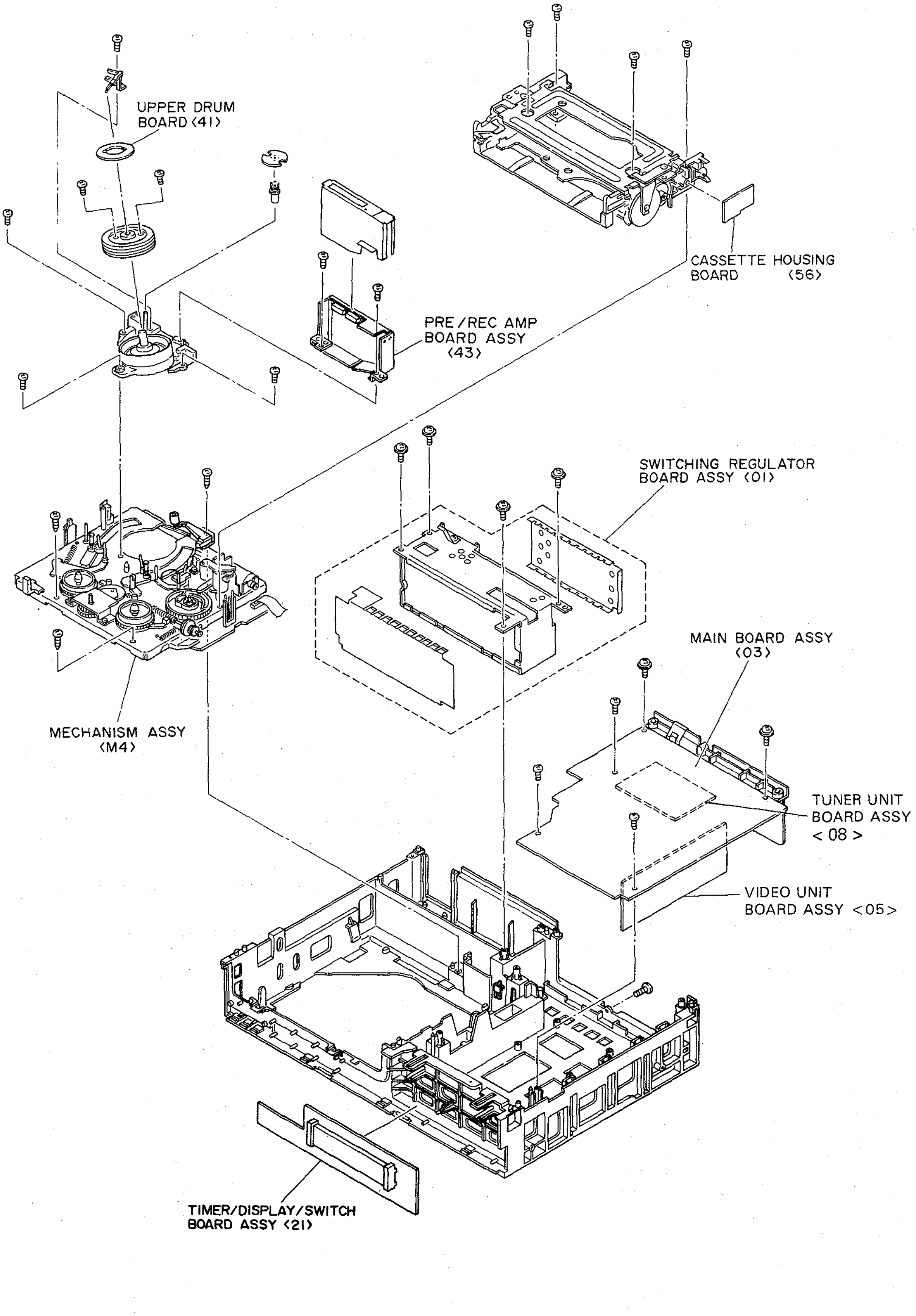
2.8 ON SCREEN CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the* 03 *MAIN board.*

No.	Item	Mode	Signal & Setting	Measurement Point	Adjustment Parts	Adjustment Procedure
1	Dot clock	• EE	• TUNER	• TP901	• C905 (DOT CLOCK)	1) Connect a frequency counter to TP901. 2) Short IC901-3 to GND and short IC901-30 to IC301-32 (SWD 5V). 3) Adjust C905 for 7.30 ± 0.05 MHz. **Note:** *If incorrectly the above adjustments, slip out the on screen display. For adjustment of above steps (2) to (4), looking for Menu on the monitor-TV and rough adjustment C905 preparation.*
2	Burst clock	• EE	• TUNER	• TP902	• C916 (BURST CLOCK)	1) Connect a frequency counter to TP902. 2) Adjust C916 for 17.73447 ± 0.00030 MHz. **Note:** *If incorrectly the above adjustment, blue back picture is not appear on the monitor-TV. For adjustment of above steps (1) to (2), looking for Menu on the monitor-TV and rough adjustment C916 preparation.*

SECTION 3
CHARTS AND DIAGRAMS

3.1 CIRCUIT BOARD AND LOCATION

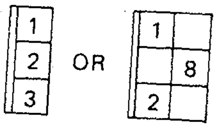


UPPER DRUM BOARD ⟨41⟩
CASSETTE HOUSING BOARD ⟨56⟩
PRE/REC AMP BOARD ASSY ⟨43⟩
SWITCHING REGULATOR BOARD ASSY ⟨01⟩
MAIN BOARD ASSY ⟨03⟩
MECHANISM ASSY ⟨M4⟩
TUNER UNIT BOARD ASSY < 08 >
VIDEO UNIT BOARD ASSY <05>
TIMER/DISPLAY/SWITCH BOARD ASSY ⟨21⟩

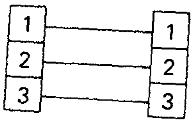
3.2 GENERAL INFORMATION

3.2.1 Connections

Note:
Unless otherwise specified, only signal input flow is indicated.
Connection arrows indicate only signal outputs.



: Connectors



: Board in connectors

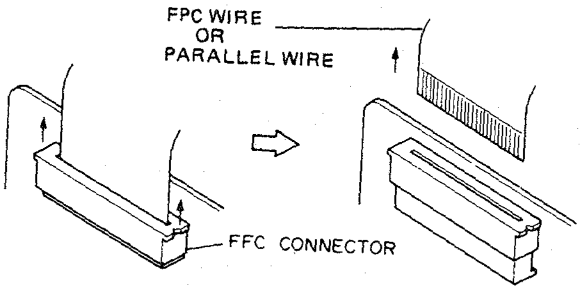
① ② ③ OR ○ ○ ○ : Direct connections

(VS) (MS) (SM) : Connected pattern in the board.
Abbreviations
V : Video M : Mechacon
S : Servo A : Audio

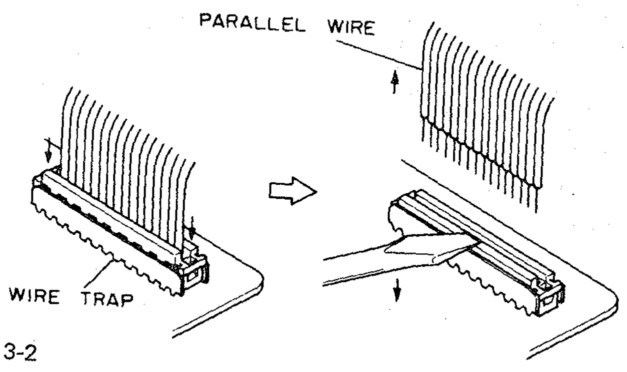
VS : Signal flow from video to servo.

3.2.2 Disconnecting the flatwire

1. Pull the connector structure upward to release the clamp when removing or inserting the flat wire cable.

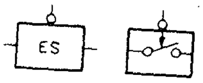


2. Depress the connector structure downward to release the clamp when removing or inserting the flat wire cable, as indicated below.

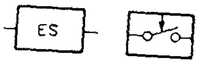


3.2.3 Indications

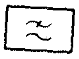
AUX : Active only at high.
$\overline{AUX}$: Active only at low.
$\bar{A}\bar{U}\bar{X}$: Active only at middle.
$\bar{A}U\bar{X}$: Active only at open.

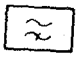


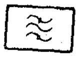
: Active only at low for electronic switch.

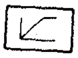


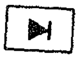
: Active only at high for electronic switch.

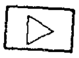

: Low pass filter.

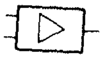

: High pass filter.


: Band pass filter.


: Limiter.


: Detector.


: Amplifier.


: Mixer stage.

3.2.4 Schematic diagram values

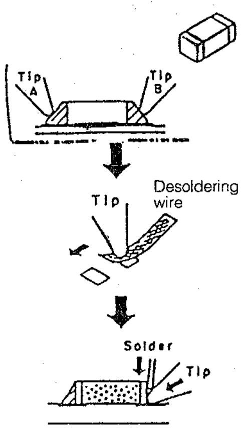
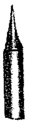
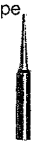
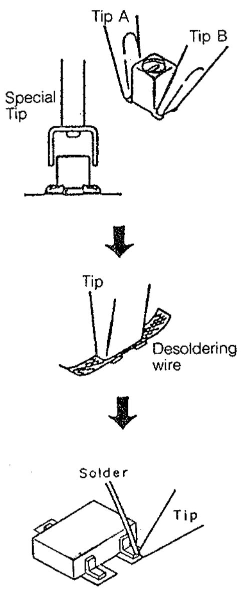
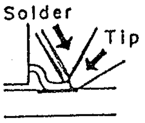
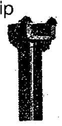
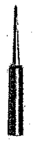
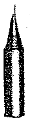
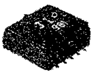
Unless otherwise specified.

1. All resistance values are in ohms, 1/6 W or 1/8 W (refer to parts list).
2. All capacitance values are in µF, (P; PF).
3. All inductance values are in µH, (m; mH).
4. All diodes are 1SS133 or MA165, (refer to parts list).
5. Voltages are DC-measured (reference to ground) with a digital voltmeter during recording (SP mode) and playback (SP mode) with alignment tape. Where voltages differ between recording and playback, the voltage during playback is shown in parenthesis.
6. Waveforms (VIDEO System) are measured (reference to ground) with a color bar during recording (SP mode) and playback (SP mode) with alignment tape.
7. Waveforms (AUDIO System) are measured (reference to ground) with 1 kHz (−8 dBs) during recording and playback with alignment tape (1 kHz).
8. Shaded (▨) parts are critical for safety. Replace only with specified part numbers.

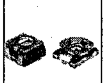
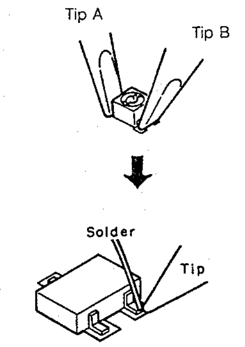
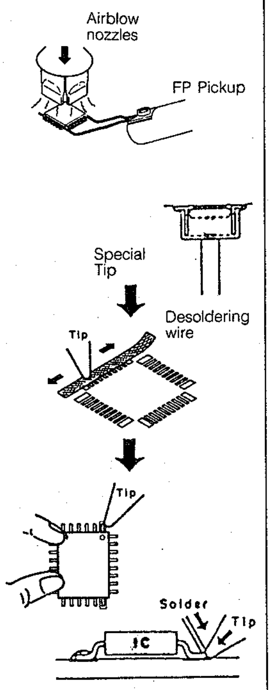
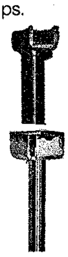
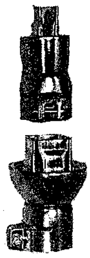
3.2.5 Signal flow in the schematic

➡ Recording signal path
⇨ Playback signal path
⇨ REC/PB signal path

3.2.6 Basic knowledge of SMC* parts replacement

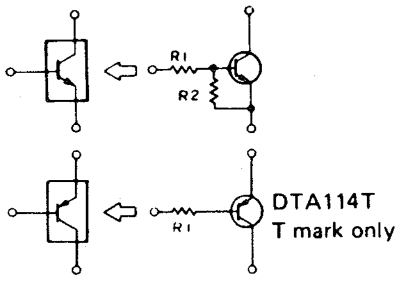
Products	Appear-ance	Replacement technology	Removal method	Installation method	Soldering tip types	Cautions
Thick Film Chip Resistors			• **Use 2 soldering irons** 1. Use thin tip soldering irons. 2. Use soldering tip temperature of about 280°C. 3. Simultaneously heat both ends of the part. 4. While heating, grasp the part with the tips of the soldering irons and remove it. 5. Use desoldering wire to completely remove the old solder from the part location of the board. 6. A clean pattern for installing the new part is very important.	1. Clean the area where the new part is to be moundted (use alcohol). 2. Apply flux. 3. Set part correctly into position, prevent it from shifting. 4. Bring the soldering iron tip close to the part contact without actually touching it. Melt thin (0.3 mm) solder between the tip and part so that it flows into the part contact. 5. Check work quality with a magnifier.	Thin tip type  Small flat-blade tip type 	Some parts can be damaged by sudden heating. Preheat the part at about 100°C for several minutes before installing it. Do not touch the part body with the soldering iron. The thin (0.3 mm) solder for miniature parts does not contain adequate flux. Supplementary flux is thus needed in most cases. Set the position carefully and secure the part. A defective trimming resistor cannot be adjusted externally. Replace with an ordinary variable resistor.
Carbon Film Chip Resitors						
Metal Film Chip Resistors						
Chip Ceramic Capacitors						
Chip Triming Resistors						
Chip Inductors		 Tip A Tip B Special Tip Tip Desoldering wire Solder Tip	• **Special desoldering iron** 1. Select soldering tip according to part size. 2. Bring the tip into contact with the soldered points. 3. When the solder melts, remove the part. 4. Remove the old solder with desoldering wire. • **2 soldering irons** 1. Use small flat-blade tips. 2. Heat both ends of the part simultaneously. 3. When the solder melts, grasp and remove the part with the soldering iron tips. 4. Remove the old solder with desoldering wire.	1. Clean the area where the new part is to be mounted (use alcohol). 2. Apply flux. 3. Set part correctly into position, prevent it from shifting. 4. Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part so that it flows into the part contact.  5. Check work quality with a magnifier.	Special Soldering tip  Small flat-blade tip type  Thin tip type 	Use care not to damage plastic components when soldering. Position the part carefully. This will also affect the soldering operation. Use care regarding soldering iron tip and avoid rapidly heating parts. For larger parts, use a slightly higher temperature (about 300°C). Check after installing (cold solder joints, etc.). Use care not to damage the circuit pattern, especially when removing.
Chip Resistor Networks						
Chip Tantalum Capacitors						
Chip Tantalum Electrolytic Capacitors						
Chip Aluminum Electrolytic Capacitors						
Chip Transformers						
Chip Filters						

*SMC: Surface Mounted Component

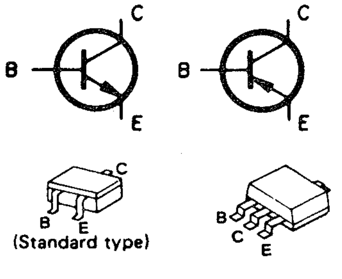
Products	Appearance	Replacement technology	Removal method	Installation method	Soldering tip types	Cautions
Chip VRs			• **2 soldering irons** 1. Use small flat-blade tips. 2. Heat the leads of the part simultaneously. 3. When the solder melts, grasp and remove the part with the soldering iron tips. 4. Remove the old solder with desoldering wire.	1. Clean the area where the new part is to be moundted (use alcohol). 2. Apply flux. 3. Set part correctly into position, prevent it from shifting. 4. Use sharp soldering iron tip. Bring close to the part contact without actually touching it. Melt thin solder between the tip and part so that it flows into the part contact.	Thin tip type Small flat-blade tip type 	Use care not to damage the part when soldering. Check for solder joints, expecially miniature parts with small leads.
Chip Trimmer Capacitors						
Diodes						
Transistors						
IC (SOP) (Small Outline Package)		 Airblow nozzles FP Pickup Special Tip Desoldering wire Tip Tip Solder Tip IC	• **Special desoldering iron** 1. Select the tip according to the size and shape of the IC. 2. "Tin" the tip with a small amount of solder. 3. Set the tip squarely over the IC leads. 4. When the solder melts, carefully twist the iron. 5. Raise and remove the IC. • **Shaped airblower unit** 1. Select the correct nozzle. 2. Select the temperature and airblow (suggested: temp. 7, airblow 4). 3. Engage the IC removing tool. 4. Use the airblow to preheat the IC for about 5 seconds, then heat with the nozzle until the IC remover lifts the part from the board.	1. Use desoldering wire to remove the previous solder. 2. Clean the location with alcohol. 3. Apply flux. 4. Position the IC and solder two pins at opposite sides. 5. Use a sharp tipped soldering iron and carefully solder each pin. (After gaining experience, a thicker tip can be used for better work efficiency.) 6. Remove any solder bridges with desoldering wire. 7. Inspect the work with a magnifier.	Special soldering tips.  Airblow nozzles 	Do not reuse removed parts. Use care to avoid solder bridges. Remove any that occurs. Remove the old IC carefully so as not to damage the circuit pattern. Because of the many pins, cleanliness of the pattern is extremely important after removing the IC. Be very precise in positioning the IC. Soldering opposite pins first holds the IC in place and makes soldering the other pins easier. It is important to inspect the work with a magnifier. ICs (especially TSOP) are easily damaged by heat. Do not touch directly with the soldering iron.
IC (SSOP) (Shrink Small Outline Package)						
IC (VSOP) (Very Small Outline Package)						
IC (QFP) (Quad Flat Package)						
IC (VQFP) (Very Small Quad Flat Package)						
IC (PLCC) (Plastic Leaded Chip Carrier)						
IC (TSOP) (Thin Small Outline Package)						

3.2.7 Semiconductors

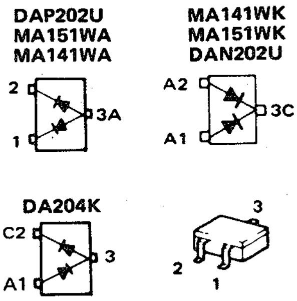
1. Digital transistor



2. Chip transistor



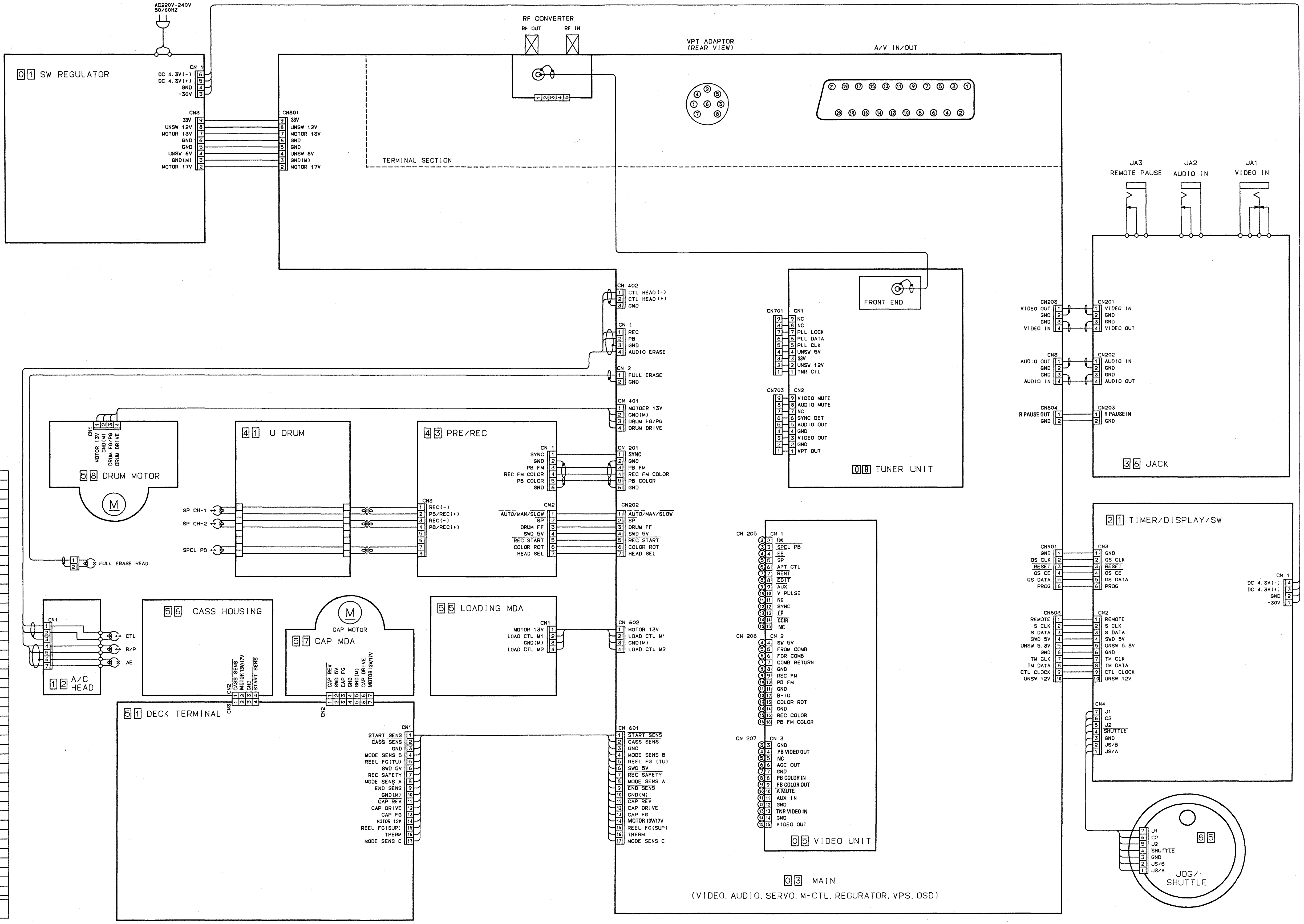
3. Chip diode



Note: The digital transistor includes built in resistors. If features small size and high reliability. Both PNP and NPN types are available.

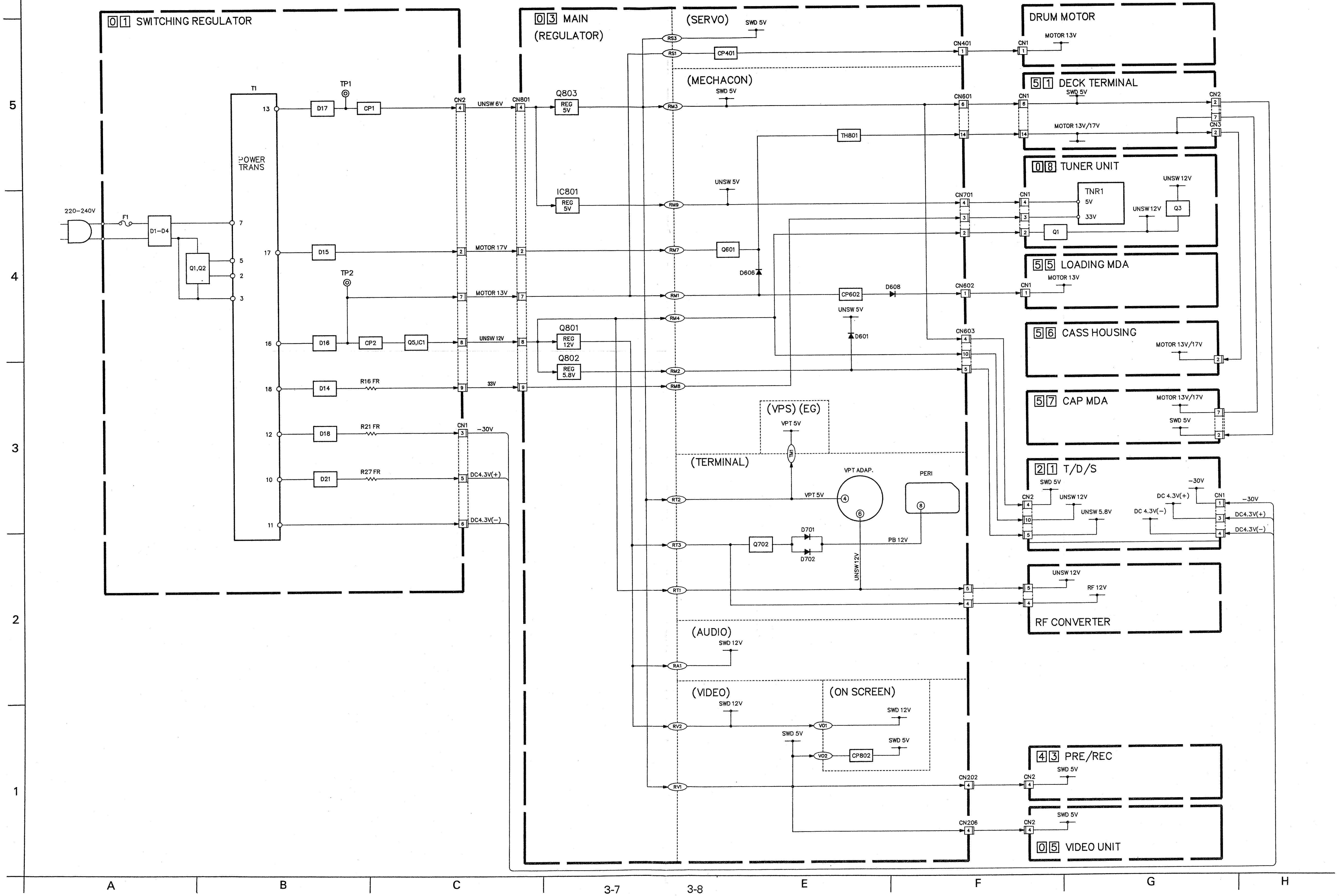
Uses: Inverter, interface, driver circuits.

3.3 BOARD INTERCONNECTIONS


AC220V-240V
50/60HZ
01 SW REGULATOR
CN 1
DC 4.3V(-) 6
DC 4.3V(+) 5
GND 4
-30V 3
CN3
33V 9
UNSW 12V 8
MOTOR 13V 7
GND 6
GND 5
UNSW 6V 4
GND(M) 3
MOTOR 17V 2
CN801
9 33V
8 UNSW 12V
7 MOTOR 13V
6 GND
5 GND
4 UNSW 6V
3 GND(M)
2 MOTOR 17V
RF CONVERTER
RF OUT
RF IN
VPT ADAPTOR
(REAR VIEW)
A/V IN/OUT
TERMINAL SECTION
JA3
REMOTE PAUSE
JA2
AUDIO IN
JA1
VIDEO IN
CN 402
1 CTL HEAD(-)
2 CTL HEAD(+)
3 GND
CN 1
1 REC
2 PB
3 GND
4 AUDIO ERASE
CN 2
1 FULL ERASE
2 GND
CN 401
1 MOTOER 13V
2 GND(M)
3 DRUM FG/PG
4 DRUM DRIVE
CN 201
1 SYNC
2 GND
3 PB FM
4 REC FM COLOR
5 PB COLOR
6 GND
CN202
1 AUTO/MAN/SLOW
2 SP
3 DRUM FF
4 SWD 5V
5 REC START
6 COLOR ROT
7 HEAD SEL
CN 602
1 MOTOR 13V
2 LOAD CTL M1
3 GND(M)
4 LOAD CTL M2
CN 601
1 START SENS
2 CASS SENS
3 GND
4 MODE SENS B
5 REEL FG (TU)
6 SWD 5V
7 REC SAFETY
8 MODE SENS A
9 END SENS
10 GND(M)
11 CAP REV
12 CAP DRIVE
13 CAP FG
14 MOTOR 13V/17V
15 REEL FG(SUP)
16 THERM
17 MODE SENS C
FRONT END
CN701
CN1
9 NC
8 NC
7 PLL LOCK
6 PLL DATA
5 PLL CLK
4 UNSW 5V
3 33V
2 UNSW 12V
1 TNR CTL
CN703
CN2
9 VIDEO MUTE
8 AUDIO MUTE
7 NC
6 SYNC DET
5 AUDIO OUT
4 GND
3 VIDEO OUT
2 GND
1 VPT OUT
08 TUNER UNIT
CN 205
CN 1
2 fsc
3 SPCL PB
4 EE
5 SP
6 APT CTL
7 RENT
8 EDIT
9 AUX
10 V PULSE
11 NC
12 SYNC
13 LP
14 CCIR
15 NC
CN 206
CN 2
4 SW 5V
5 FROM COMB
6 FOR COMB
7 COMB RETURN
8 GND
9 REC FM
10 PB FM
11 GND
12 B-ID
13 COLOR ROT
14 GND
15 REC COLOR
16 PB FM COLOR
CN 207
CN 3
3 GND
4 PB VIDEO OUT
5 NC
6 AGC OUT
7 GND
8 PB COLOR IN
9 PB COLOR OUT
10 A MUTE
11 AUX IN
12 GND
13 TNR VIDEO IN
14 GND
15 VIDEO OUT
05 VIDEO UNIT
03 MAIN
(VIDEO, AUDIO, SERVO, M-CTL, REGURATOR, VPS, OSD)
CN203
VIDEO OUT 1
GND 2
GND 3
VIDEO IN 4
CN201
1 VIDEO IN
2 GND
3 GND
4 VIDEO OUT
CN3
AUDIO OUT 1
GND 2
GND 3
AUDIO IN 4
CN202
1 AUDIO IN
2 GND
3 GND
4 AUDIO OUT
CN604
R PAUSE OUT 1
GND 2
CN203
1 R PAUSE IN
2 GND
36 JACK
21 TIMER/DISPLAY/SW
CN901
GND 1
OS CLK 2
RESET 3
OS CE 4
OS DATA 5
PROG 6
CN3
1 GND
2 OS CLK
3 RESET
4 OS CE
5 OS DATA
6 PROG
CN 1
DC 4.3V(-) 4
DC 4.3V(+) 3
GND 2
-30V 1
CN603
REMOTE 1
S CLK 2
S DATA 3
SWD 5V 4
UNSW 5.8V 5
GND 6
TM CLK 7
TM DATA 8
CTL CLOCK 9
UNSW 12V 10
CN2
1 REMOTE
2 S CLK
3 S DATA
4 SWD 5V
5 UNSW 5.8V
6 GND
7 TM CLK
8 TM DATA
9 CTL CLOCK
10 UNSW 12V
CN4
7 J1
6 C2
5 J2
4 SHUTTLE
3 GND
2 JS/B
1 JS/A
7 J1
6 C2
5 J2
4 SHUTTLE
3 GND
2 JS/B
1 JS/A
85
JOG/
SHUTTLE
CN1
MOTOR 13V
GND(M)
DRUM FG/PG
DRUM DRIVE
58 DRUM MOTOR
M
41 U DRUM
SP CH-1
SP CH-2
SPCL PB
FULL ERASE HEAD
43 PRE/REC
CN 1
SYNC 1
GND 2
PB FM 3
REC FM COLOR 4
PB COLOR 5
GND 6
CN3
1 REC(-)
2 PB/REC(+)
3 REC(-)
4 PB/REC(+)
CN2
AUTO/MAN/SLOW 1
SP 2
DRUM FF 3
SWD 5V 4
REC START 5
COLOR ROT 6
HEAD SEL 7
CN1
CTL
R/P
AE
12 A/C HEAD
56 CASS HOUSING
CN2
CASS SENS
MOTOR 13V/17V
GND
START SENS
CN3
CAP MOTOR
57 CAP MDA
CAP REV
SWD 5V
CAP FG
GND
GND(M)
CAP DRIVE
MOTOR 13V/17V
CN2
55 LOADING MDA
CN1
MOTOR 13V 1
LOAD CTL M1 2
GND(M) 3
LOAD CTL M2 4
51 DECK TERMINAL
CN1
START SENS 1
CASS SENS 2
GND 3
MODE SENS B 4
REEL FG(TU) 5
SWD 5V 6
REC SAFETY 7
MODE SENS A 8
END SENS 9
GND(M) 10
CAP REV 11
CAP DRIVE 12
CAP FG 13
MOTOR 12V 14
REEL FG(SUP) 15
THERM 16
MODE SENS C 17
6
5
4
3
2
1
A
B
C
D
E
F
G
H

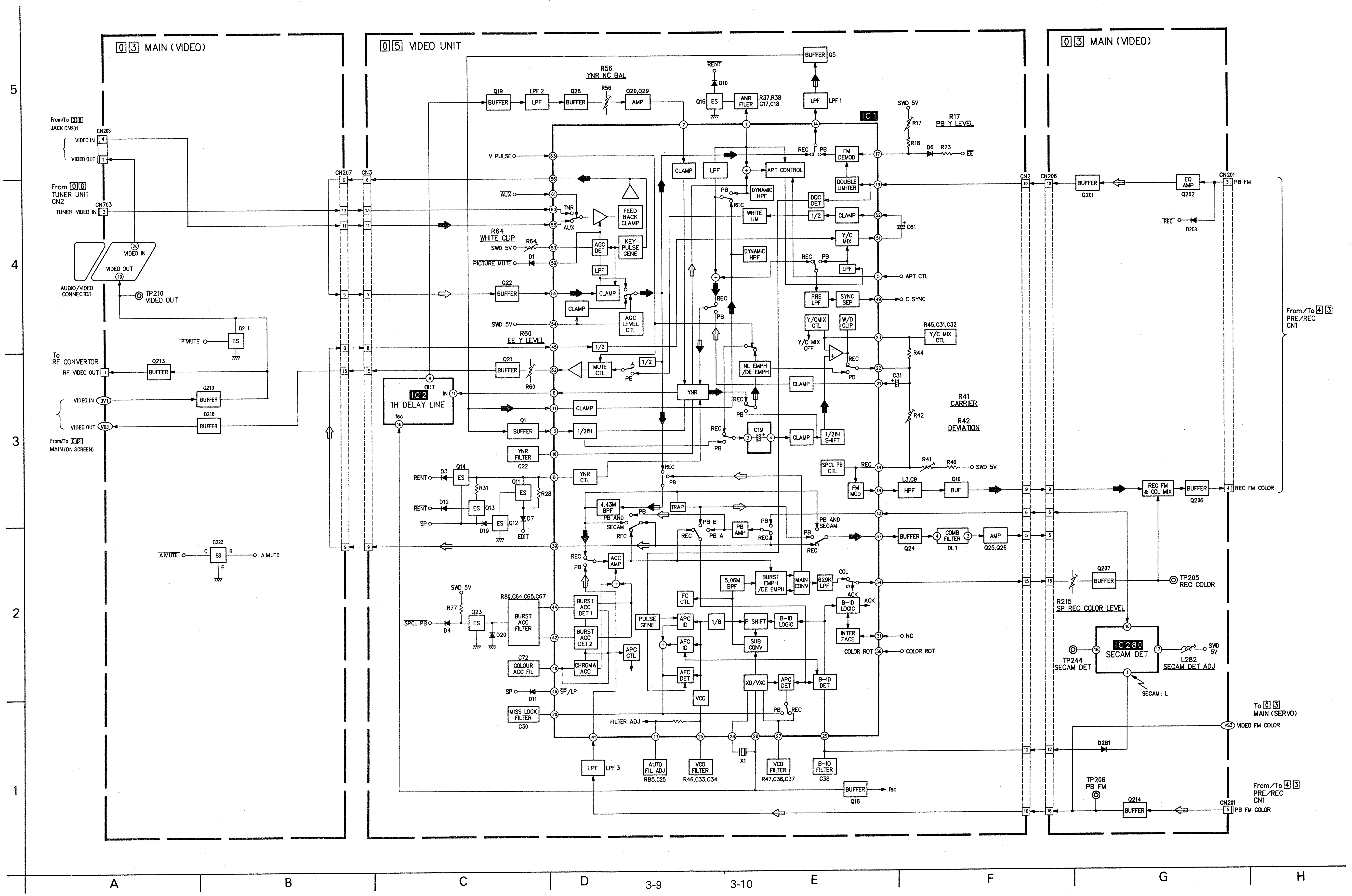
NO	NAME
8 5	JOG SHUTTLE
6 0	
5 9	
5 8	DRUM MOTOR
5 7	CAP MDA
5 6	CASSETTE HOUSING
5 5	LOADING MDA
5 4	
5 3	
5 2	
5 1	DECK TERMINAL
5 0	
4 3	PRE/REC AMP
4 1	UPPER DRUM
3 6	JACK
3 0	
2 6	
2 5	
2 4	
2 3	
2 2	
2 1	TIMER/DISPLAY/SW
2 0	
1 9	
1 8	
1 7	
1 5	
1 4	
1 3	
1 2	A/C HEAD
1 1	
1 0	
0 9	
0 8	TUNER UNIT
0 7	
0 6	
0 5	VIDEO UNIT
0 4	
0 3	MAIN
0 2	
0 1	SW REGULATOR

3.4 POWER SYSTEM BLOCK DIAGRAM

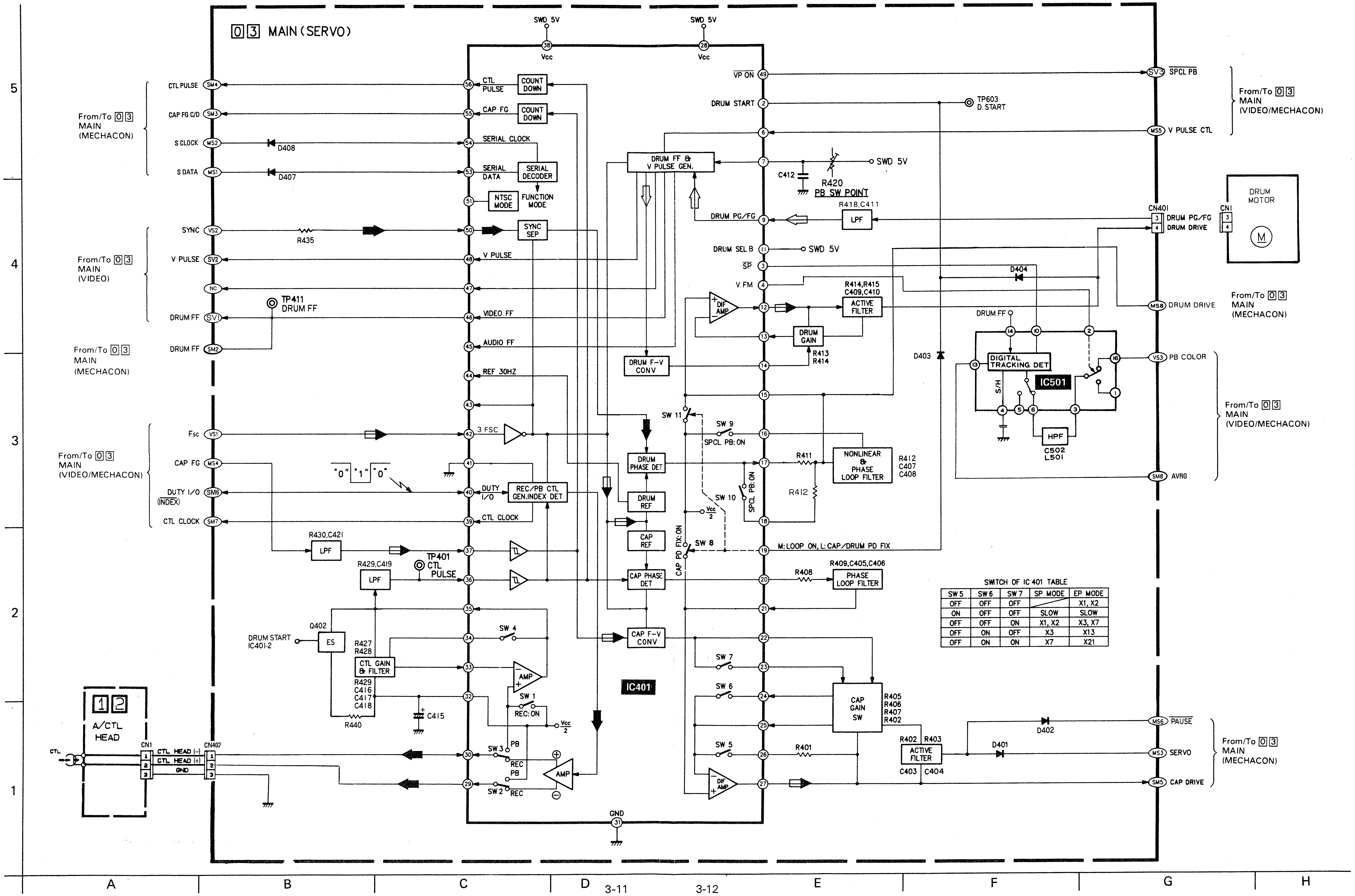


01 SWITCHING REGULATOR
T1
POWER TRANS
TP1
TP2
220-240V
F1
D1-D4
Q1,Q2
D17
CP1
D15
D16
CP2
Q5,IC1
D14
R16 FR
D18
R21 FR
D21
R27 FR
CN2
CN1
UNSW 6V
MOTOR 17V
MOTOR 13V
UNSW 12V
33V
-30V
DC4.3V(+)
DC4.3V(-)
03 MAIN (REGULATOR)
CN801
Q803
REG 5V
IC801
REG 5V
Q801
REG 12V
Q802
REG 5.8V
(SERVO)
SWD 5V
CP401
CN401
(MECHACON)
SWD 5V
TH801
UNSW 5V
Q601
D606
CP602
D608
D601
CN601
CN701
CN602
CN603
(VPS) (EG)
VPT 5V
(TERMINAL)
VPT ADAP.
PERI
VPT 5V
Q702
D701
D702
PB 12V
UNSW 12V
(AUDIO)
SWD 12V
(VIDEO)
SWD 12V
(ON SCREEN)
SWD 12V
SWD 5V
SWD 5V
CP802
CN202
CN206
RS3
RS1
RM3
RM9
RM7
RM1
RM4
RM2
RM8
RT2
RT3
RT1
RA1
RV2
RV1
VO1
VO2
DRUM MOTOR
MOTOR 13V
51 DECK TERMINAL
SWD 5V
MOTOR 13V/17V
CN3
08 TUNER UNIT
TNR1
5V
33V
UNSW 12V
Q3
Q1
55 LOADING MDA
MOTOR 13V
56 CASS HOUSING
MOTOR 13V/17V
57 CAP MDA
MOTOR 13V/17V
SWD 5V
21 T/D/S
SWD 5V
UNSW 12V
UNSW 5.8V
DC 4.3V(+)
DC 4.3V(-)
-30V
RF 12V
RF CONVERTER
43 PRE/REC
SWD 5V
05 VIDEO UNIT
SWD 5V
A
B
C
E
F
G
H
6
5
4
3
2
1

3.5 VIDEO BLOCK DIAGRAM


03 MAIN (VIDEO)
05 VIDEO UNIT
03 MAIN (VIDEO)
From/To 36 JACK CN201
CN203
VIDEO IN
VIDEO OUT
From 08 TUNER UNIT CN2
CN703
TUNER VIDEO IN
AUDIO/VIDEO CONNECTOR
VIDEO IN
VIDEO OUT
TP210 VIDEO OUT
Q211
P.MUTE
ES
To RF CONVERTOR
RF VIDEO OUT
Q213 BUFFER
Q210 BUFFER
Q218 BUFFER
VIDEO IN
VIDEO OUT
From/To 03 MAIN (ON SCREEN)
Q222
A.MUTE
A MUTE
CN207
CN3
IC2
1H DELAY LINE
IC1
Q19 BUFFER
LPF 2 LPF
Q28 BUFFER
R56 YNR NC BAL
Q20,Q29 AMP
BUFFER Q5
LPF LPF 1
RENT
D10
Q16 ES
ANR FILER
R37,R38 C17,C18
V PULSE
AUX
TNR
FEED BACK CLAMP
R64 WHITE CLIP
SWD 5V
AGC DET
KEY PULSE GENE
PICTURE MUTE
D1
LPF
Q22 BUFFER
CLAMP
AGC LEVEL CTL
R60 EE Y LEVEL
1/2
Q21 BUFFER
MUTE CTL
YNR
C19
Q1 BUFFER
1/2fH
YNR FILTER C22
YNR CTL
Q14 ES
Q11 ES
Q13 ES
Q12 ES
D3 D12 D19 D7
R31 R28
RENT
SP
EDIT
4.43M BPF
TRAP
PB AND SECAM
PB AMP
ACC AMP
5.06M BPF
BURST EMPH /DE EMPH
MAIN CONV
629K LPF
B-ID LOGIC
INTER FACE
PULSE GENE
FC CTL
APC ID
AFC ID
AFC DET
1/8
P SHIFT
B-ID LOGIC
SUB CONV
XO/VXO
APC DET
B-ID DET
VCO
R80,C64,C65,C67
BURST ACC FILTER
BURST ACC DET 1
BURST ACC DET 2
CHROMA ACC
APC CTL
C72 COLOUR ACC FIL
SPCL PB
Q23 ES
D4 D20 D11
R77
SP/LP
MISS LOCK FILTER C30
FILTER ADJ
LPF LPF 3
AUTO FIL ADJ R85,C25
VCO FILTER R46,C33,C34
X1
VCO FILTER R47,C36,C37
B-ID FILTER C38
BUFFER Q18 fsc
CLAMP
LPF
APT CONTROL
DYNAMIC HPF
WHITE LIM
DOC DET
1/2
CLAMP
Y/C MIX
DYNAMIC HPF
LPF
PRE LPF
SYNC SEP
Y/CMIX CTL
W/D CLIP
Y/C MIX OFF
NL EMPH /DE EMPH
CLAMP
CLAMP
1/2fH SHIFT
SPCL PB CTL
FM MOD
FM DEMOD
DOUBLE LIMITER
R17 PB Y LEVEL
SWD 5V
R17 R18 D6 R23 EE
C61
APT CTL
C SYNC
R45,C31,C32 Y/C MIX CTL
R44
C31
R41 CARRIER
R42 DEVIATION
R42
R41 R40 SWD 5V
L3,C9 HPF
Q10 BUF
BUFFER Q24
COMB FILTER DL1
AMP Q25,Q26
COL
ACK
NC
COLOR ROT
CN2
CN206
BUFFER Q201
EQ AMP Q202
CN201
PB FM
REC D203
From/To 43 PRE/REC CN1
REC FM & COL MIX
BUFFER Q206
REC FM COLOR
Q207 BUFFER
TP205 REC COLOR
R215 SP REC COLOR LEVEL
IC280 SECAM DET
TP244 SECAM DET
L282 SECAM DET ADJ
SWD 5V
SECAM : L
To 03 MAIN (SERVO)
VS3 VIDEO FM COLOR
D281
TP206 PB FM
Q214 BUFFER
From/To 43 PRE/REC CN1
CN201
PB FM COLOR
REC
PB
1
2
3
4
5
A
B
C
D
E
F
G
H

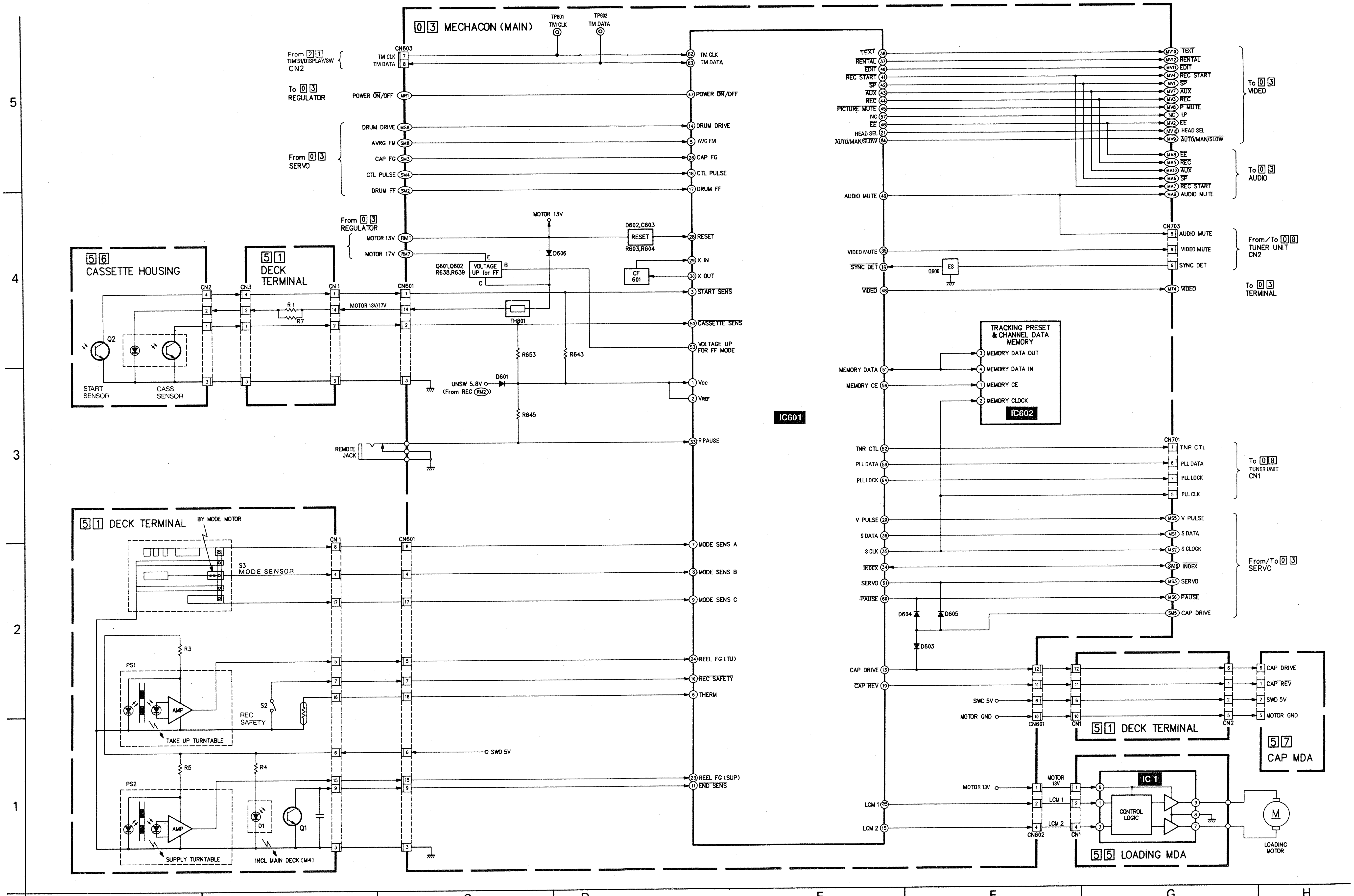
3.6 SERVO BLOCK DIAGRAM


03 MAIN (SERVO)
IC401
IC501
SWD 5V
Vcc
GND
From/To 03 MAIN (MECHACON)
From/To 03 MAIN (VIDEO)
From/To 03 MAIN (VIDEO/MECHACON)
From/To 03 MAIN (MECHACON)
CTL PULSE
CAP FG C/D
S CLOCK
S DATA
SYNC
V PULSE
DRUM FF
Fsc
CAP FG
DUTY I/O (INDEX)
CTL CLOCK
D408
D407
R435
TP411 DRUM FF
COUNT DOWN
SERIAL CLOCK
SERIAL DATA
SERIAL DECODER
NTSC MODE
FUNCTION MODE
SYNC SEP
VIDEO FF
AUDIO FF
REF 30HZ
3 FSC
REC/PB CTL GEN.INDEX DET
R430,C421
LPF
R429,C419
TP401 CTL PULSE
DRUM START IC401-2
Q402
ES
R427 R428
CTL GAIN & FILTER
R429 C416 C417 C418
R440
C415
AMP
SW 1 REC: ON
SW 2
SW 3
SW 4
REC
PB
Vcc/2
12 A/CTL HEAD
CN1
CN402
CTL HEAD (−)
CTL HEAD (+)
GND
CTL
DRUM FF & V PULSE GEN.
DRUM F-V CONV
DRUM PHASE DET
DRUM REF
CAP REF
CAP PHASE DET
CAP F-V CONV
VP ON
DRUM START
TP603 D. START
C412
R420 PB SW POINT
DRUM PG/FG
R418,C411
DRUM SEL B
SP
V. FM
DIF AMP
DRUM GAIN
R413 R414
R414,R415 C409,C410
ACTIVE FILTER
SW 8
SW 9 SPCL PB: ON
SW 10
SW 11
SPCL PB: ON
CAP PD FIX: ON
R411
R412
NONLINEAR & PHASE LOOP FILTER
R412 C407 C408
M: LOOP ON, L: CAP/DRUM PD FIX
R408
R409,C405,C406
PHASE LOOP FILTER
SW 5
SW 6
SW 7
CAP GAIN SW
R405 R406 R407 R402
R401
R402 R403
ACTIVE FILTER
C403 C404
D401
D402
D403
D404
DRUM FF
DIGITAL TRACKING DET
S/H
HPF
C502 L501
CN401
CN1
DRUM PG/FG
DRUM DRIVE
DRUM MOTOR
M
SPCL PB
V PULSE CTL
DRUM DRIVE
PB COLOR
AVRG
PAUSE
SERVO
CAP DRIVE
"0" "1" "0"
5
4
3
2
1
A
B
C
D
E
F
G
H

SWITCH OF IC 401 TABLE

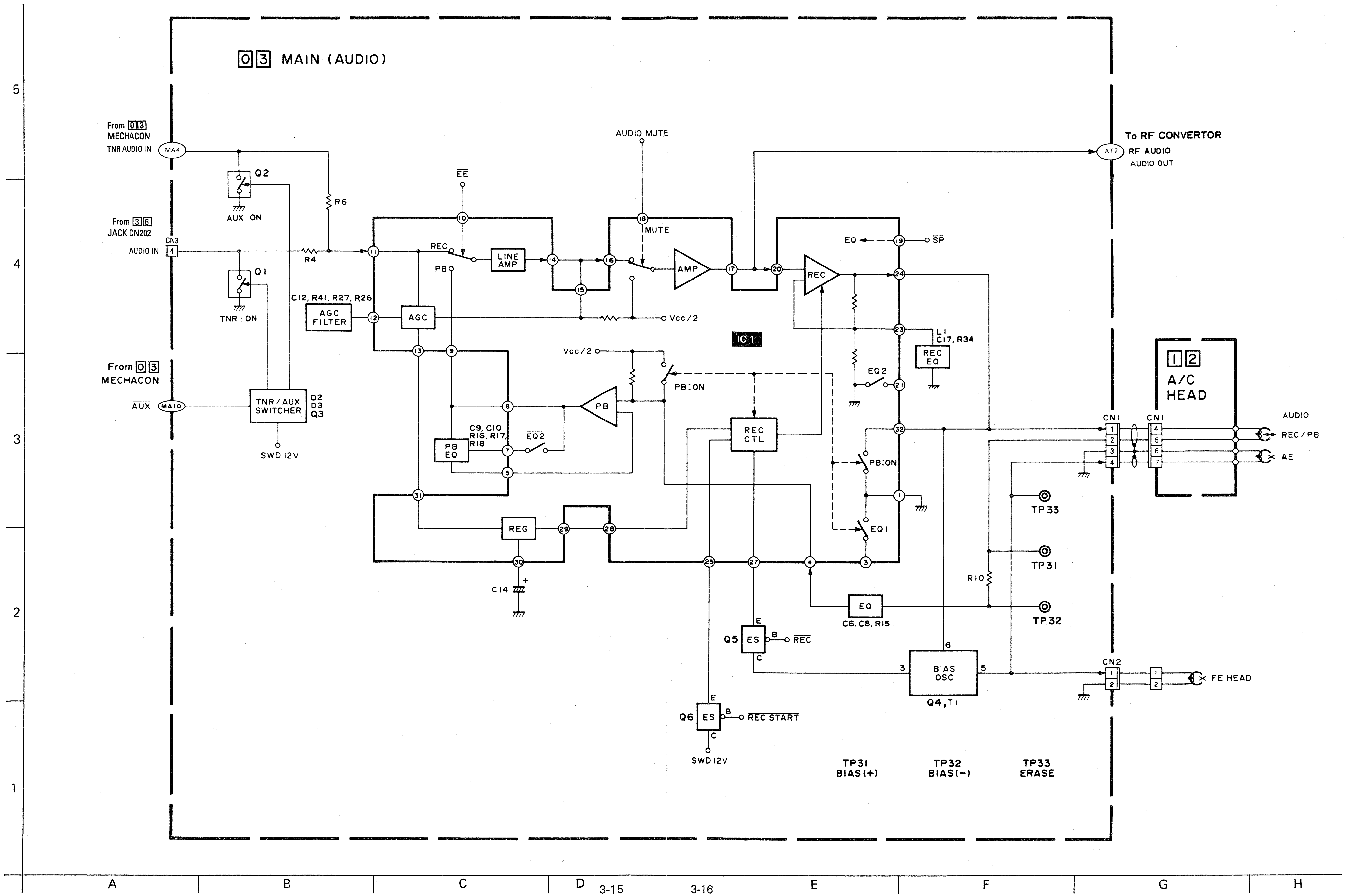
SW 5	SW 6	SW 7	SP MODE	EP MODE
OFF	OFF	OFF		X1, X2
ON	OFF	OFF	SLOW	SLOW
OFF	OFF	ON	X1, X2	X3, X7
OFF	ON	OFF	X3	X13
OFF	ON	ON	X7	X21

3.7 MECHACON BLOCK DIAGRAM



0 3 MECHACON (MAIN)
TP601 TM CLK
TP602 TM DATA
From 2 1 TIMER/DISPLAY/SW CN2
CN603
TM CLK 7
TM DATA 8
62 TM CLK
63 TM DATA
To 0 3 REGULATOR
POWER ON/OFF MR1
47 POWER ON/OFF
From 0 3 SERVO
DRUM DRIVE MS8
AVRG FM SM8
CAP FG SM3
CTL PULSE SM4
DRUM FF SM2
14 DRUM DRIVE
5 AVG FM
26 CAP FG
18 CTL PULSE
17 DRUM FF
From 0 3 REGULATOR
MOTOR 13V RM1
MOTOR 17V RM7
MOTOR 13V
D606
D602,C603
RESET
R603,R604
28 RESET
29 X IN
30 X OUT
CF 601
Q601,Q602
R638,R639
VOLTAGE UP for FF
E
B
C
5 6 CASSETTE HOUSING
Q2
START SENSOR
CASS. SENSOR
CN2
CN3
5 1 DECK TERMINAL
R1
R7
CN 1
MOTOR 13V/17V
CN601
TH801
3 START SENS
50 CASSETTE SENS
53 VOLTAGE UP FOR FF MODE
R653
R643
D601
UNSW 5.8V (From REG RM2)
1 Vcc
2 VREF
R645
REMOTE JACK
33 R PAUSE
IC601
5 1 DECK TERMINAL
BY MODE MOTOR
S3 MODE SENSOR
7 MODE SENS A
8 MODE SENS B
9 MODE SENS C
R3
PS1
AMP
TAKE UP TURNTABLE
S2
REC SAFETY
24 REEL FG (TU)
10 REC SAFETY
6 THERM
SWD 5V
R5
R4
PS2
AMP
D1
Q1
SUPPLY TURNTABLE
INCL MAIN DECK [M4]
23 REEL FG (SUP)
11 END SENS
TEXT 38
RENTAL 37
EDIT 40
REC START 41
SP 42
AUX 43
REC 44
PICTURE MUTE 45
NC 57
EE 46
HEAD SEL 21
AUTO/MAN/SLOW 54
MV10 TEXT
MV12 RENTAL
MV11 EDIT
MV4 REC START
MV1 SP
MV7 AUX
MV3 REC
MV8 P MUTE
NC LP
MV2 EE
MV15 HEAD SEL
MV9 AUTO/MAN/SLOW
To 0 3 VIDEO
MA8 EE
MA5 REC
MA10 AUX
MA6 SP
MA7 REC START
MA9 AUDIO MUTE
To 0 3 AUDIO
AUDIO MUTE 49
CN703
8 AUDIO MUTE
9 VIDEO MUTE
6 SYNC DET
From/To 0 8 TUNER UNIT CN2
VIDEO MUTE 39
SYNC DET 16
Q606
ES
VIDEO 48
MT4 VIDEO
To 0 3 TERMINAL
TRACKING PRESET & CHANNEL DATA MEMORY
3 MEMORY DATA OUT
4 MEMORY DATA IN
1 MEMORY CE
2 MEMORY CLOCK
IC602
MEMORY DATA 51
MEMORY CE 56
CN701
TNR CTL 52
PLL DATA 59
PLL LOCK 64
1 TNR CTL
6 PLL DATA
7 PLL LOCK
5 PLL CLK
To 0 8 TUNER UNIT CN1
V PULSE 20
S DATA 36
S CLK 35
INDEX 34
SERVO 61
PAUSE 60
MS5 V PULSE
MS1 S DATA
MS2 S CLOCK
SM6 INDEX
MS3 SERVO
MS6 PAUSE
SM5 CAP DRIVE
From/To 0 3 SERVO
D604
D605
D603
CAP DRIVE 13
CAP REV 19
SWD 5V
MOTOR GND
CN601
CN1
5 1 DECK TERMINAL
CN2
6 CAP DRIVE
1 CAP REV
2 SWD 5V
5 MOTOR GND
5 7 CAP MDA
MOTOR 13V
MOTOR 13V
LCM 1
LCM 2
LCM 1 25
LCM 2 15
CN602
IC 1
CONTROL LOGIC
5 5 LOADING MDA
M
LOADING MOTOR
5
4
3
2
1
A
B
C
D
E
F
G
H

3.8 AUDIO BLOCK DIAGRAM



03 MAIN (AUDIO)
From 03 MECHACON
TNR AUDIO IN
MA4
Q2
AUX : ON
R6
From 36 JACK CN202
CN3
AUDIO IN
4
R4
Q1
TNR : ON
From 03 MECHACON
AUX
MA10
TNR / AUX SWITCHER
D2 D3 Q3
SWD 12V
C12, R41, R27, R26
AGC FILTER
12
AGC
11
EE
10
REC
PB
LINE AMP
14
15
16
AUDIO MUTE
18
MUTE
AMP
17
Vcc / 2
13
9
Vcc / 2
PB : ON
PB
8
C9, C10 R16, R17, R18
PB EQ
7
EQ2
5
31
REG
29
28
30
C14
IC 1
REC CTL
25
27
4
3
20
REC
EQ
19
SP
24
23
L1 C17, R34
REC EQ
EQ 2
21
32
PB : ON
1
EQ1
EQ
C6, C8, R15
R10
TP33
TP31
TP32
Q5
ES
E
B
C
REC
Q6
ES
REC START
SWD 12V
BIAS OSC
Q4, T1
3
5
6
AT2
To RF CONVERTOR
RF AUDIO
AUDIO OUT
12
A/C HEAD
CN1
CN1
1
2
3
4
4
5
6
7
AUDIO
REC / PB
AE
CN2
1
2
1
2
FE HEAD
TP31 BIAS(+)
TP32 BIAS(−)
TP33 ERASE
5
4
3
2
1
A
B
C
D
E
F
G
H

6

3.9 PRE/REC BLOCK DIAGRAM

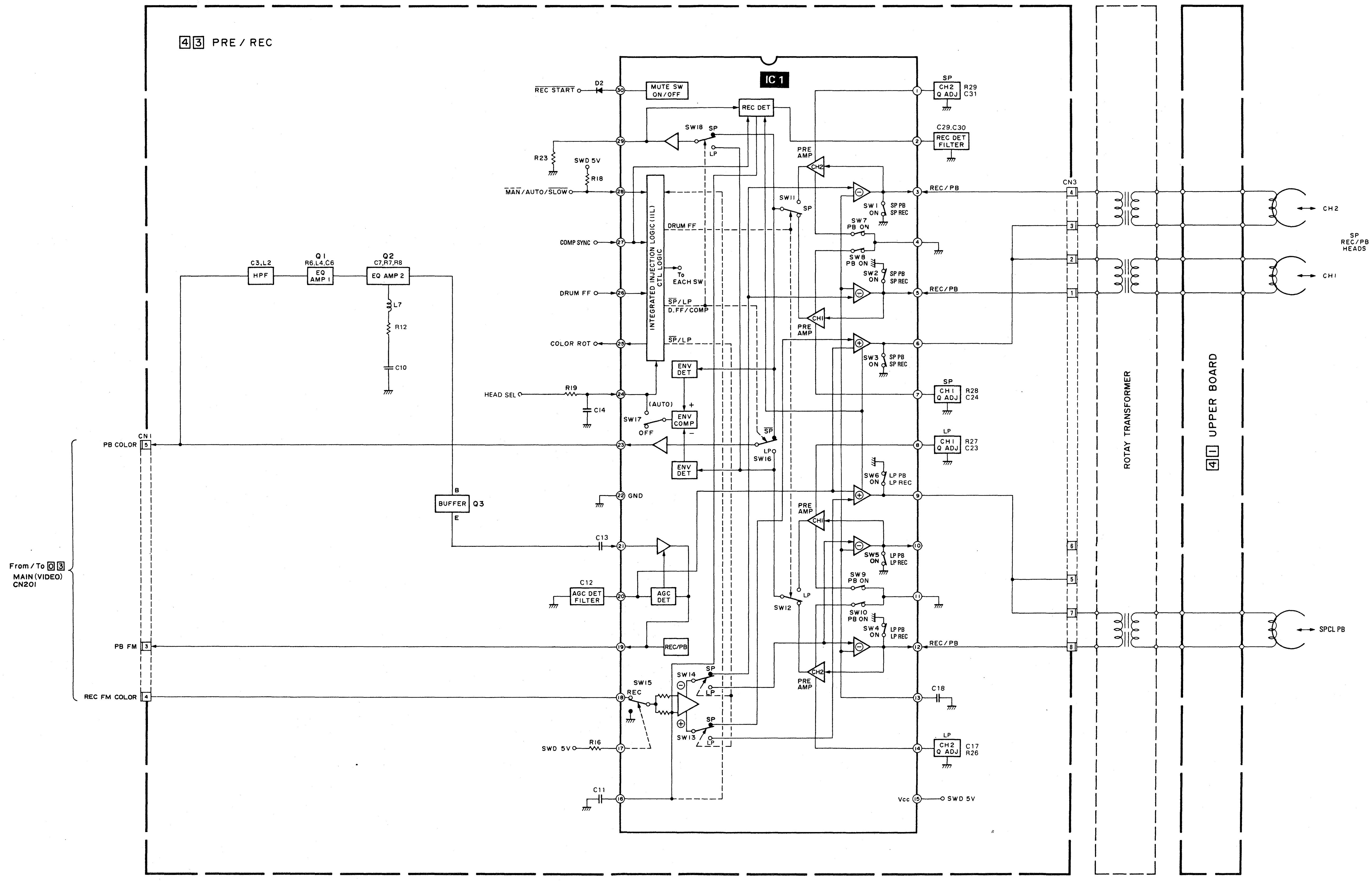
5

4

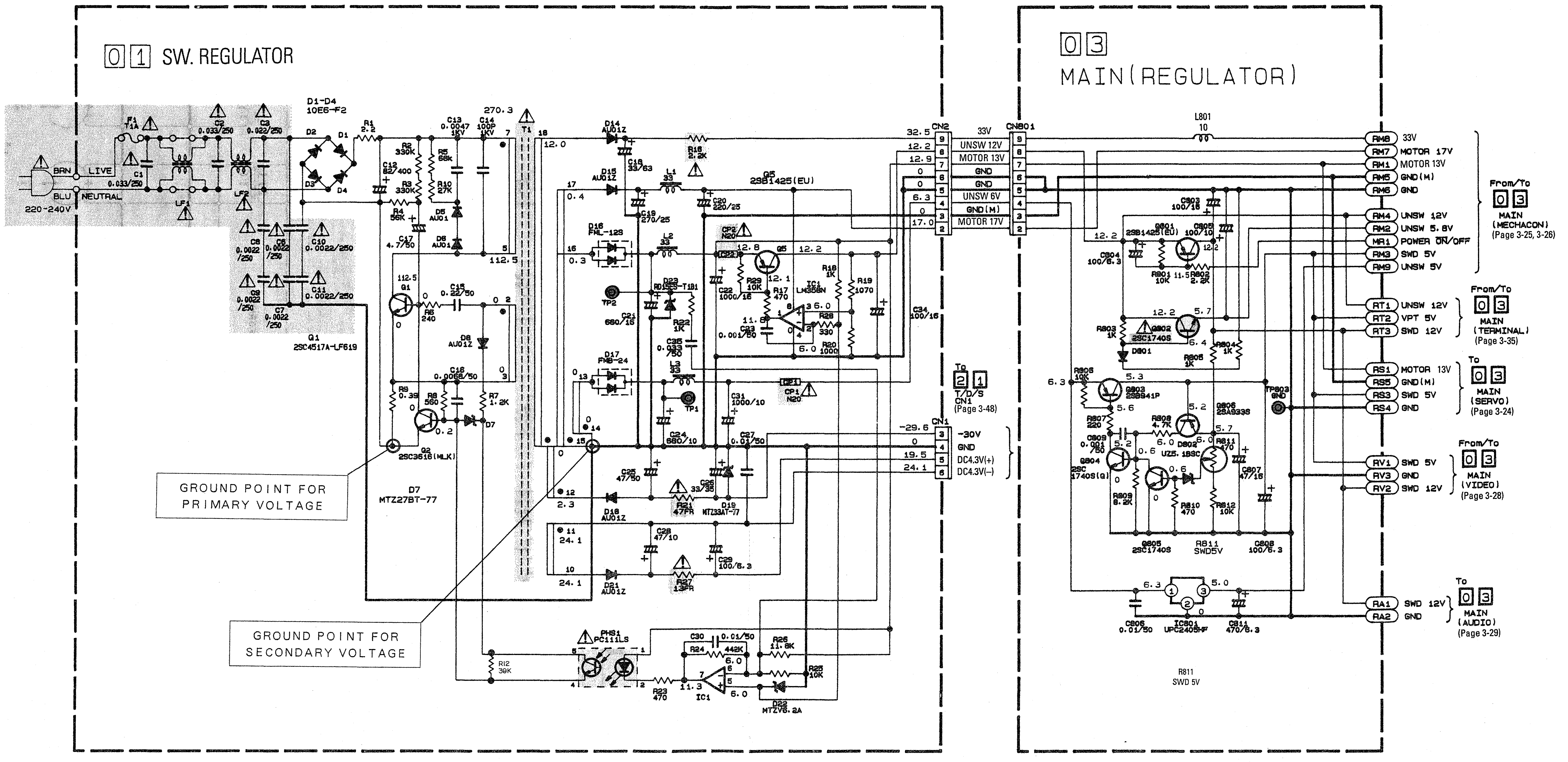
3

2

1

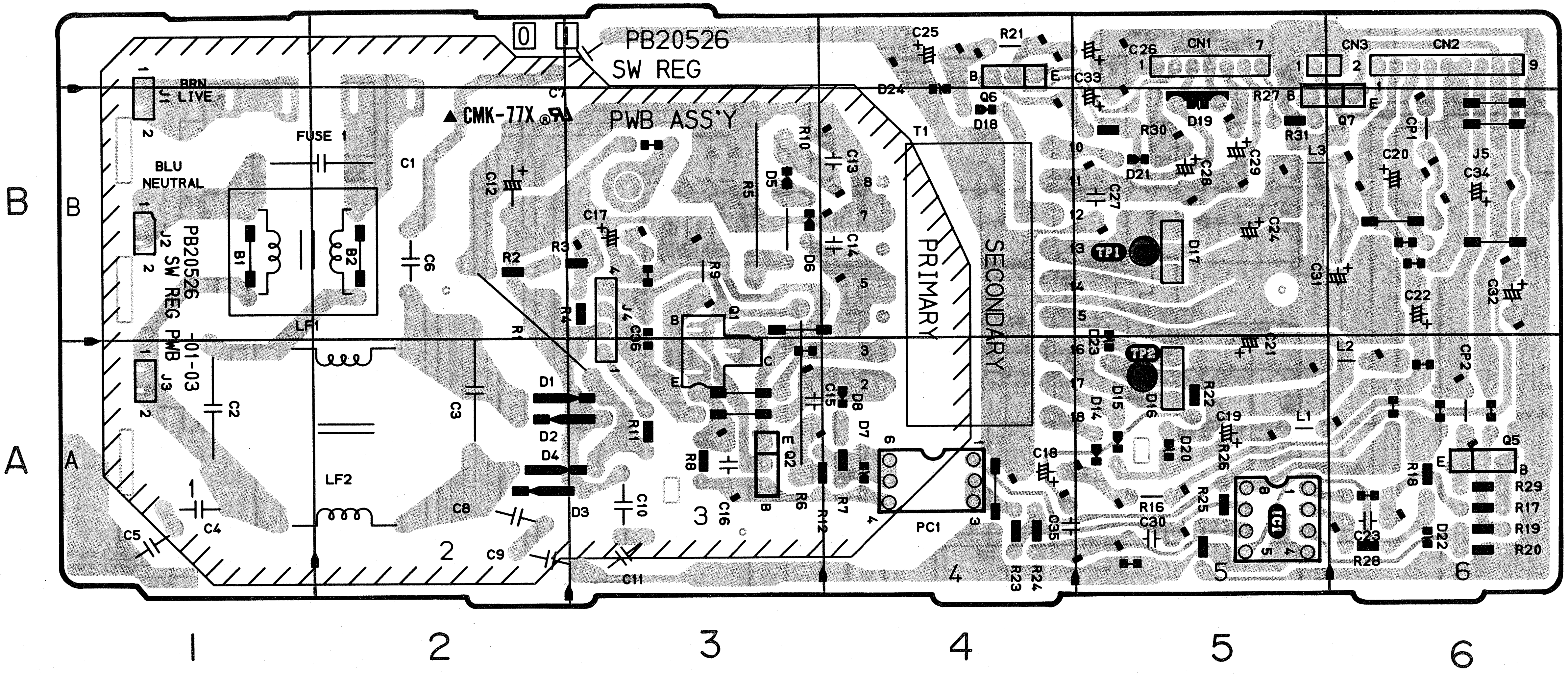

4 3 PRE / REC
IC 1
REC START
D2
MUTE SW ON/OFF
REC DET
SW18
SP
LP
R23
SWD 5V
R18
MAN/AUTO/SLOW
INTEGRATED INJECTION LOGIC (IIL) CTL LOGIC
DRUM FF
COMP SYNC
To EACH SW
DRUM FF
SP/LP
D.FF/COMP
COLOR ROT
SP/LP
ENV DET
HEAD SEL
R19
C14
(AUTO)
SW17
OFF
ENV COMP
SP
LP
SW16
ENV DET
GND
C13
C12
AGC DET FILTER
AGC DET
REC/PB
SW15
REC
SW14
SW13
SWD 5V
R16
C11
SP
CH2 Q ADJ
R29 C31
C29.C30
REC DET FILTER
PRE AMP
CH2
CH1
REC/PB
SW1 ON SP PB SP REC
SW7 PB ON
SW11
SW8 PB ON
SW2 ON SP PB SP REC
SW3 ON SP PB SP REC
SP
CH1 Q ADJ
R28 C24
LP
CH1 Q ADJ
R27 C23
SW6 ON LP PB LP REC
SW5 ON LP PB LP REC
SW9 PB ON
SW12
SW10 PB ON
SW4 ON LP PB LP REC
C18
LP
CH2 Q ADJ
C17 R26
Vcc
SWD 5V
C3,L2
HPF
Q1
R6,L4,C6
EQ AMP 1
Q2
C7,R7,R8
EQ AMP 2
L7
R12
C10
B
BUFFER Q3
E
CN1
PB COLOR
PB FM
REC FM COLOR
From/To 0 3 MAIN (VIDEO) CN201
CN3
ROTAY TRANSFORMER
4 1 UPPER BOARD
CH2
SP REC/PB HEADS
CH1
SPCL PB

3.10 SWITCHING REGULATOR AND REGULATOR SCHEMATIC DIAGRAMS

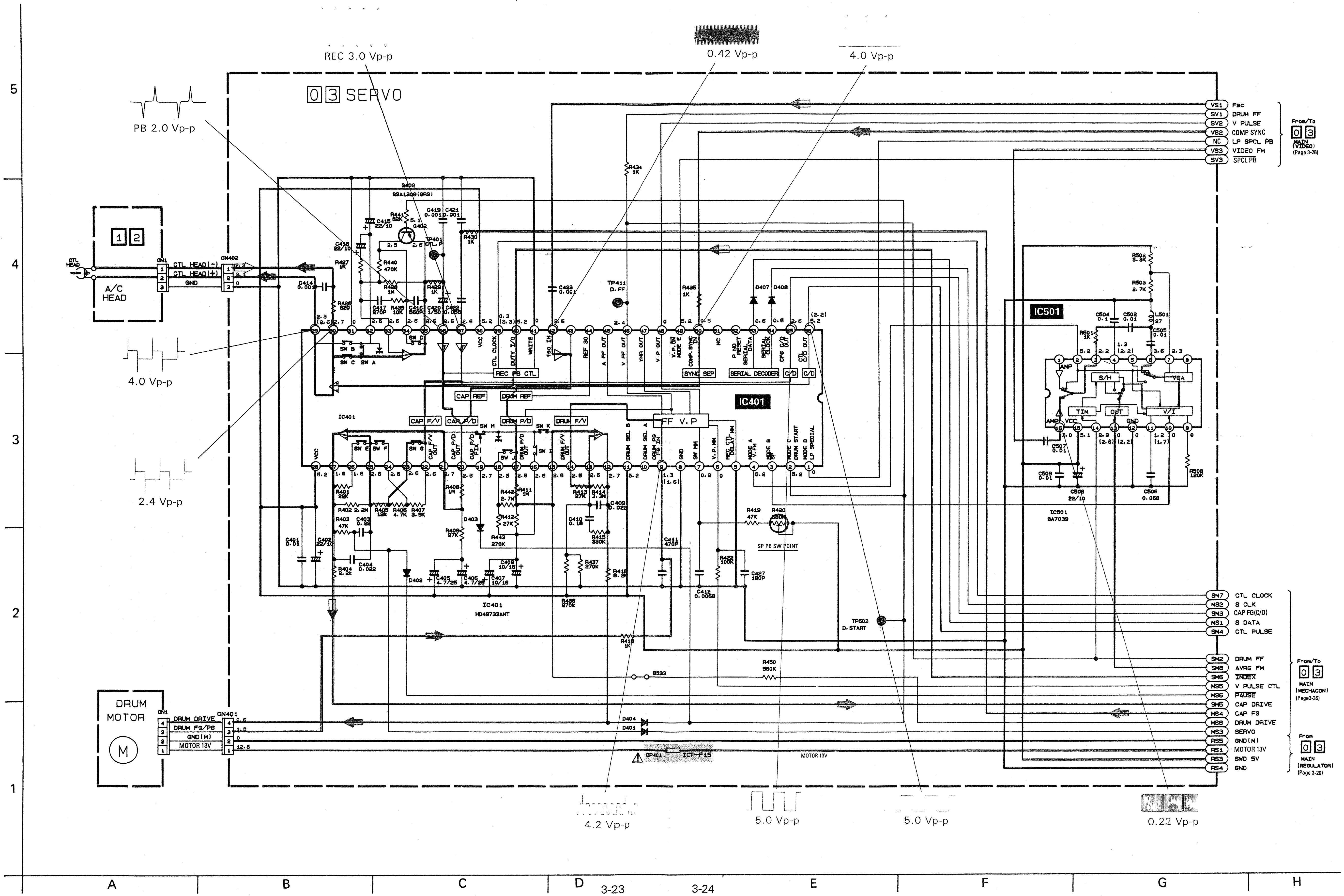


01 SW. REGULATOR
03 MAIN(REGULATOR)
220-240V
BRN
BLU
LIVE
NEUTRAL
F1 T1A
C1 0.033/250
C2 0.033/250
C3 0.022/250
LF1
LF2
C5 0.0022/250
C6 0.0022/250
C9 0.0022/250
C7 0.0022/250
C10 0.0022/250
C11 0.0022/250
D1-D4 10E6-F2
R1 2.2
C12 82/400
R2 330K
R3 330K
R4 56K
R5 68K
R10 27K
C13 0.0047 1KV
C14 100P 1KV
D5 AU01
D6 AU01
C17 4.7/50
270.3
112.5
T1
Q1 2SC4517A-LF619
R6 240
C15 0.22/50
D8 AU01Z
C16 0.0068/50
R9 0.39
R8 560
R7 1.2K
D7
Q2 2SC3616(MLK)
D7 MTZ27BT-77
GROUND POINT FOR PRIMARY VOLTAGE
GROUND POINT FOR SECONDARY VOLTAGE
R12 39K
PHS1 PC111LS
R23 470
IC1
C30 0.01/50
R24 442K
R26 11.8K
R25 10K
D22 MTZV6.2A
D14 AU01Z
D15 AU01Z
C18 33/63
C19 270/25
L1 33
L2 33
L3 33
R18 2.2K
C20 220/25
D16 FML-12S
D17 FMB-24
D23 RD15ES-T1B1
R22 1K
C21 680/16
C35 0.033/50
TP1
TP2
C24 680/10
C25 47/50
R21 47FR
C26 33/35
D18 AU01Z
D19 MTZ33AT-77
C28 47/10
C29 100/6.3
R27 13FR
D21 AU01Z
Q5 2SB1425(EU)
CP2 N20
CP1 N20
C22 1000/16
R29 10K
R17 470
IC1 LM358N
R16 1K
R19 1070
R28 330
R20 1000
C23 0.001/50
C34 100/16
C31 1000/10
C27 0.01/50
CN2
33V
UNSW 12V
MOTOR 13V
GND
GND
UNSW 6V
GND(M)
MOTOR 17V
CN801
To 21 T/D/S CN1 (Page 3-48)
CN1
-30V
GND
DC4.3V(+)
DC4.3V(–)
L801 10
C803 100/16
Q801 2SB1425(EU)
C805 100/10
C804 100/6.3
R801 10K
R802 2.2K
R803 1K
Q802 2SC1740S
D801
R805 1K
R804 1K
R806 10K
Q803 2SB941P
Q806 2SA933S
R807 220
R808 4.7K
C809 0.001/50
Q804 2SC1740S(Q)
D802 UZ5.1BSC
R811 470
C807 47/16
R809 8.2K
R810 470
R812 10K
Q805 2SC1740S
R811 SWD5V
C808 100/6.3
TP803 GND
C806 0.01/50
IC801 UPC2405HF
C811 470/6.3
R811 SWD 5V
RM8 33V
RM7 MOTOR 17V
RM1 MOTOR 13V
RM5 GND(M)
RM6 GND
RM4 UNSW 12V
RM2 UNSW 5.8V
MR1 POWER ON/OFF
RM3 SWD 5V
RM9 UNSW 5V
From/To 03 MAIN (MECHACON) (Page 3-25, 3-26)
RT1 UNSW 12V
RT2 VPT 5V
RT3 SWD 12V
From/To 03 MAIN (TERMINAL) (Page 3-35)
RS1 MOTOR 13V
RS5 GND(M)
RS3 SWD 5V
RS4 GND
To 03 MAIN (SERVO) (Page 3-24)
RV1 SWD 5V
RV3 GND
RV2 SWD 12V
From/To 03 MAIN (VIDEO) (Page 3-28)
RA1 SWD 12V
RA2 GND
To 03 MAIN (AUDIO) (Page 3-29)

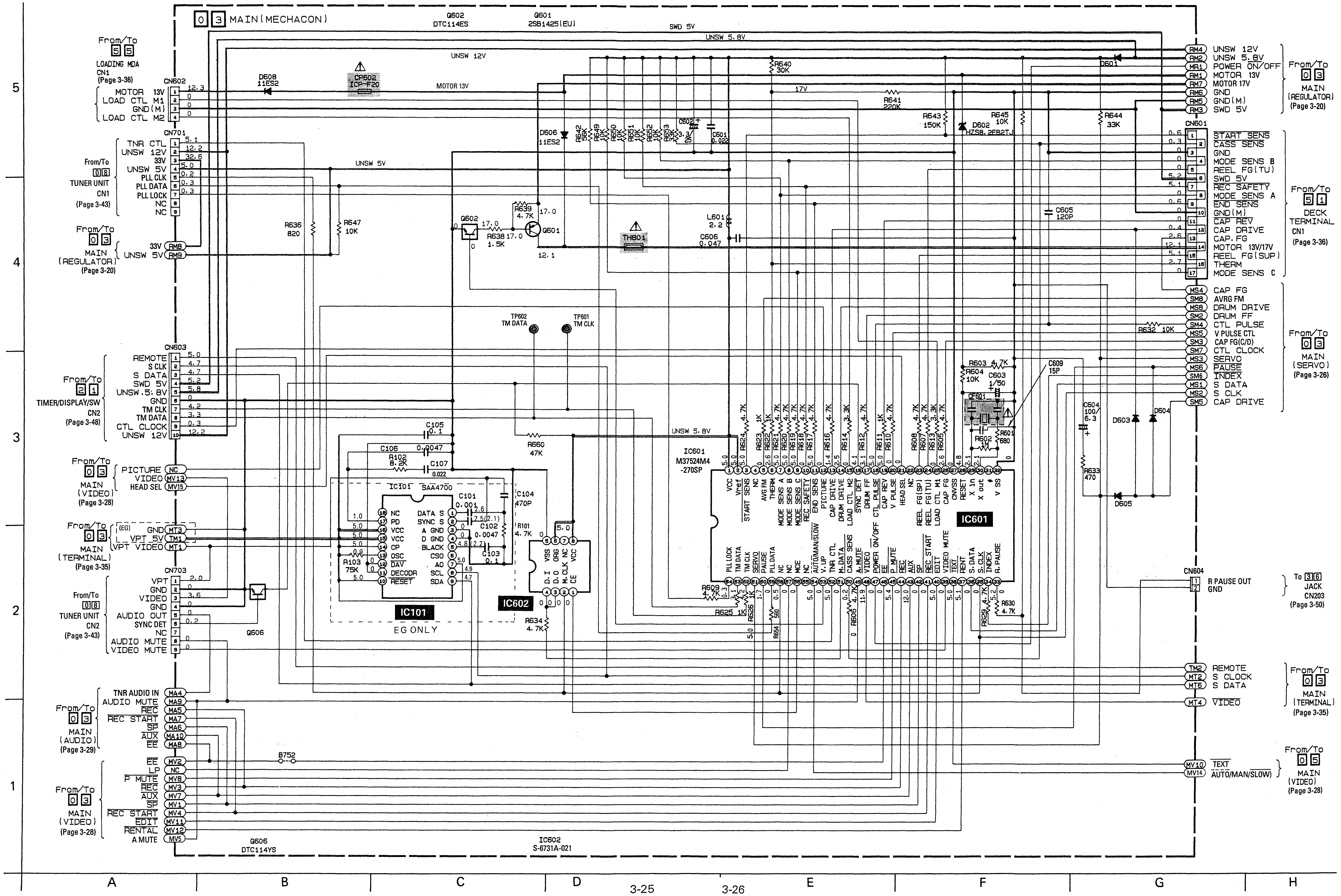
3.11 SWITCHING REGULATOR CIRCUIT BOARD


PB20526
SW REG
PWB ASS'Y
CMK-77X
PB20526 -01-03
J2 SW REG PWB
BRN LIVE
BLU NEUTRAL
FUSE 1
J1
J2
J3
J4
J5
B1
B2
LF1
LF2
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C16
C17
C18
C19
C20
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C31
C32
C33
C34
C35
C36
D1
D2
D3
D4
D5
D6
D7
D8
D14
D15
D16
D17
D18
D19
D20
D21
D22
D23
D24
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R16
R17
R18
R19
R20
R21
R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
Q1
Q2
Q5
Q6
Q7
T1
PRIMARY
SECONDARY
PC1
IC1
TP1
TP2
CN1
CN2
CN3
CP1
CP2
L1
L2
L3
B
A
1
2
3
4
5
6

3.12 SERVO SCHEMATIC DIAGRAM

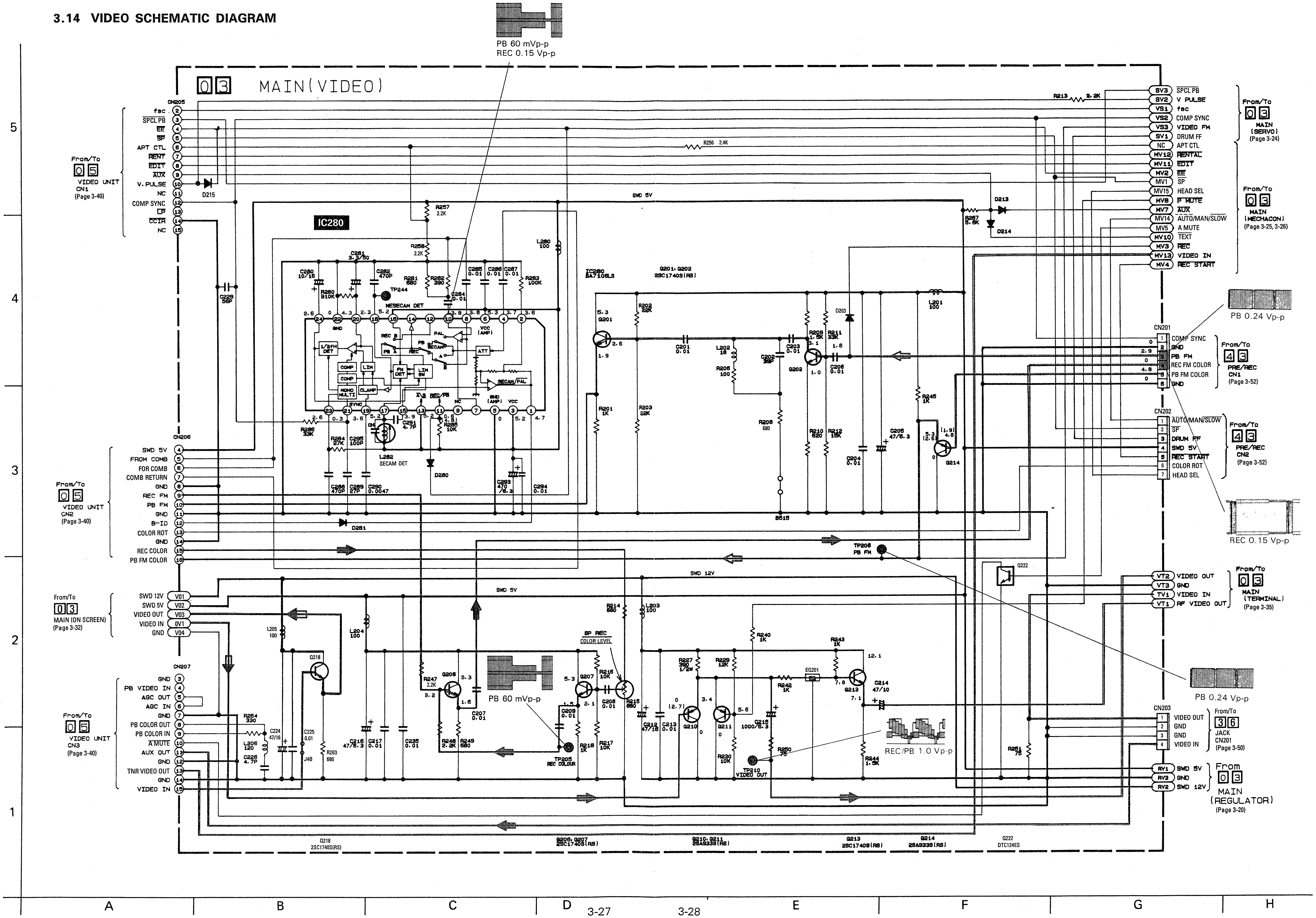

03 SERVO
REC 3.0 Vp-p
0.42 Vp-p
4.0 Vp-p
PB 2.0 Vp-p
4.0 Vp-p
2.4 Vp-p
4.2 Vp-p
5.0 Vp-p
5.0 Vp-p
0.22 Vp-p
12
A/C HEAD
CTL HEAD
CN1
CTL HEAD(-)
CTL HEAD(+)
GND
CN402
DRUM MOTOR
M
DRUM DRIVE
DRUM FG/PG
GND(M)
MOTOR 13V
CN401
Q402
2SA1309(QRS)
TP401 CTL.P
TP411 D.FF
TP603 D.START
D407
D408
D403
D402
D404
D401
B533
CP401 ICP-F15
MOTOR 13V
IC401
HD49733ANT
REC PB CTL
SYNC SEP
SERIAL DECODER
C/D
CAP REF
DRUM REF
CAP F/V
CAP P/D
DRUM P/D
DRUM F/V
FF V.P
SP PB SW POINT
IC501
BA7039
AMP
S/H
VGA
TIM
OUT
V/I
VCC
GND
VS1 Fsc
SV1 DRUM FF
SV2 V PULSE
VS2 COMP SYNC
NC LP SPCL PB
VS3 VIDEO FM
SV3 SPCL PB
From/To 03 MAIN (VIDEO) (Page 3-28)
SM7 CTL CLOCK
MS2 S CLK
SM3 CAP FG(C/D)
MS1 S DATA
SM4 CTL PULSE
SM2 DRUM FF
SM8 AVRG FM
SM6 INDEX
MS5 V PULSE CTL
MS6 PAUSE
SM5 CAP DRIVE
MS4 CAP FG
SM1 DRUM DRIVE
MS3 SERVO
From/To 03 MAIN (MECHACON) (Page3-26)
RS5 GND(M)
RS1 MOTOR 13V
RS3 SWD 5V
RS4 GND
From 03 MAIN (REGULATOR) (Page 3-20)
1
2
3
4
5
A
B
C
D
E
F
G
H

3.13 MECHACON SCHEMATIC DIAGRAM



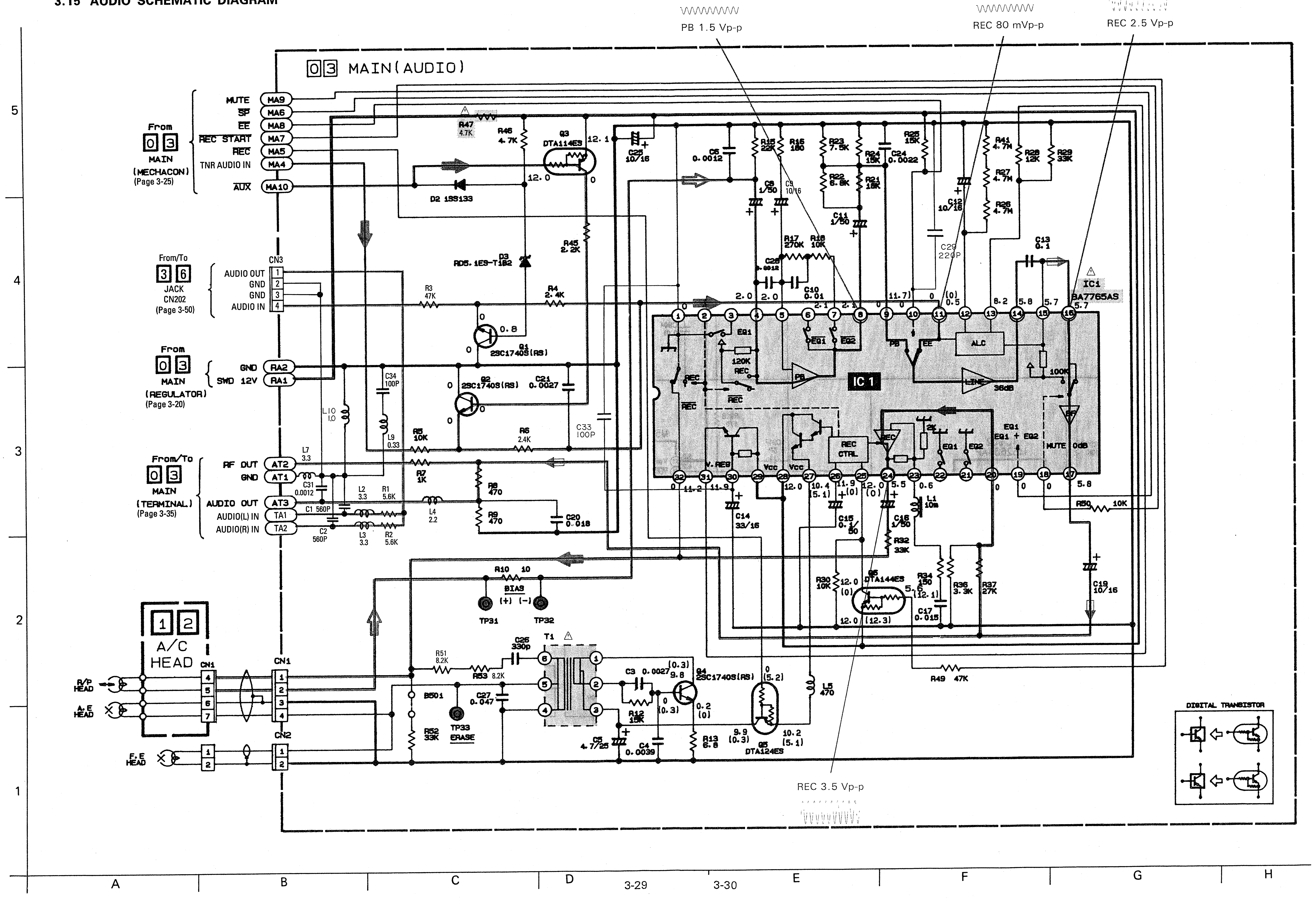
0 3 MAIN (MECHACON)
Q602 DTC114ES
Q601 2SB1425(EU)
SWD 5V
UNSW 5.8V
UNSW 12V
MOTOR 13V
D608 11ES2
CP602 ICP-F20
From/To 5 5 LOADING MDA CN1 (Page 3-36)
CN602
MOTOR 13V
LOAD CTL M1
GND (M)
LOAD CTL M2
CN701
TNR CTL
UNSW 12V
33V
UNSW 5V
PLL CLK
PLL DATA
PLL LOCK
NC
From/To 0 8 TUNER UNIT CN1 (Page 3-43)
From/To 0 3 MAIN (REGULATOR) (Page 3-20)
33V
UNSW 5V
R636 820
R647 10K
Q602
R638 1.5K
R639 4.7K
Q601
D606 11ES2
TH801
L601 2.2
C606 0.047
C601 0.022
R640 30K
17V
R641 220K
R643 150K
D602 HZS8.2EB2TJ
R645 10K
R644 33K
D601
C605 120P
TP602 TM DATA
TP601 TM CLK
CN603
REMOTE
S CLK
S DATA
SWD 5V
UNSW 5.8V
GND
TM CLK
TM DATA
CTL CLOCK
UNSW 12V
From/To 2 1 TIMER/DISPLAY/SW CN2 (Page 3-48)
From/To 0 3 MAIN (VIDEO) (Page 3-28)
PICTURE
VIDEO
HEAD SEL
From/To 0 3 MAIN (TERMINAL) (Page 3-35)
GND
VPT 5V
VPT VIDEO
CN703
VPT
GND
VIDEO
GND
AUDIO OUT
SYNC DET
NC
AUDIO MUTE
VIDEO MUTE
From/To 0 8 TUNER UNIT CN2 (Page 3-43)
Q606
C105 0.1
C106 0.0047
R102 8.2K
C107 0.022
IC101 SAA4700
C101 0.001
C102 0.0047
C103 0.1
C104 470P
R101 4.7K
R103 75K
NC PD VCC VCC CP OSC DAV DECODR RESET
DATA S SYNC S A GND D GND BLACK CSO A0 SCL SDA
IC101
EG ONLY
IC602
VSS ORG CS VCC
D.I D.O M.CLK CE
R634 4.7K
R660 47K
UNSW 5.8V
IC601 M37524M4 -270SP
VCC Vref START SENS TM CLK AVG FM THERM MODE SENS A MODE SENS B MODE SENS C REC SAFETY END SENS PICTURE CAP DRIVE DRUM DRIVE LOAD CTL M2 SYNC DET DRUM FF CTL PULSE CAP REV V PULSE HEAD SEL NC REEL FG(SP) REEL FG(TU) LOAD CTL M1 CAP FG CNVSS RESET X in X out V SS
PLL LOCK TM DATA TM CLK SERVO PAUSE PLL DATA NC NC MCE NC AUTO/MAN/SLOW V.UP TNR CTL M.DATA CASS SENS A.MUTE VIDEO POWER ON/OFF EE P MUTE REC AUX SP REC START EDIT VIDEO MUTE TEXT RENT S.DATA S.CLK INDEX R.PAUSE
IC601
R603 4.7K
R604 10K
C603 1/50
C609 15P
CF601
R602
R601 680
C604 100/6.3
R633 470
D603
D604
D605
R632 10K
R609 4.7K
R625 1K
R626 1K
R654 560
R606 4.7K
R629 4.7K
R630 4.7K
UNSW 12V
UNSW 5.8V
POWER ON/OFF
MOTOR 13V
MOTOR 17V
GND
GND (M)
SWD 5V
From/To 0 3 MAIN (REGULATOR) (Page 3-20)
CN601
START SENS
CASS SENS
GND
MODE SENS B
REEL FG (TU)
SWD 5V
REC SAFETY
MODE SENS A
END SENS
GND (M)
CAP REV
CAP DRIVE
CAP. FG
MOTOR 13V/17V
REEL FG (SUP)
THERM
MODE SENS C
From/To 5 1 DECK TERMINAL CN1 (Page 3-36)
CAP FG
AVRG FM
DRUM DRIVE
DRUM FF
CTL PULSE
V PULSE CTL
CAP FG(C/D)
CTL CLOCK
SERVO
PAUSE
INDEX
S DATA
S CLK
CAP DRIVE
From/To 0 3 MAIN (SERVO) (Page 3-26)
CN604
R PAUSE OUT
GND
To 3 6 JACK CN203 (Page 3-50)
REMOTE
S CLOCK
S DATA
VIDEO
From/To 0 3 MAIN (TERMINAL) (Page 3-35)
TNR AUDIO IN
AUDIO MUTE
REC
REC START
SP
AUX
EE
From/To 0 3 MAIN (AUDIO) (Page 3-29)
B752
EE
LP
P MUTE
REC
AUX
SP
REC START
EDIT
RENTAL
A MUTE
From/To 0 3 MAIN (VIDEO) (Page 3-28)
TEXT
AUTO/MAN/SLOW
From/To 0 5 MAIN (VIDEO) (Page 3-28)
Q606 DTC114YS
IC602 S-6731A-021
1 2 3 4 5
A B C D E F G H

3.14 VIDEO SCHEMATIC DIAGRAM



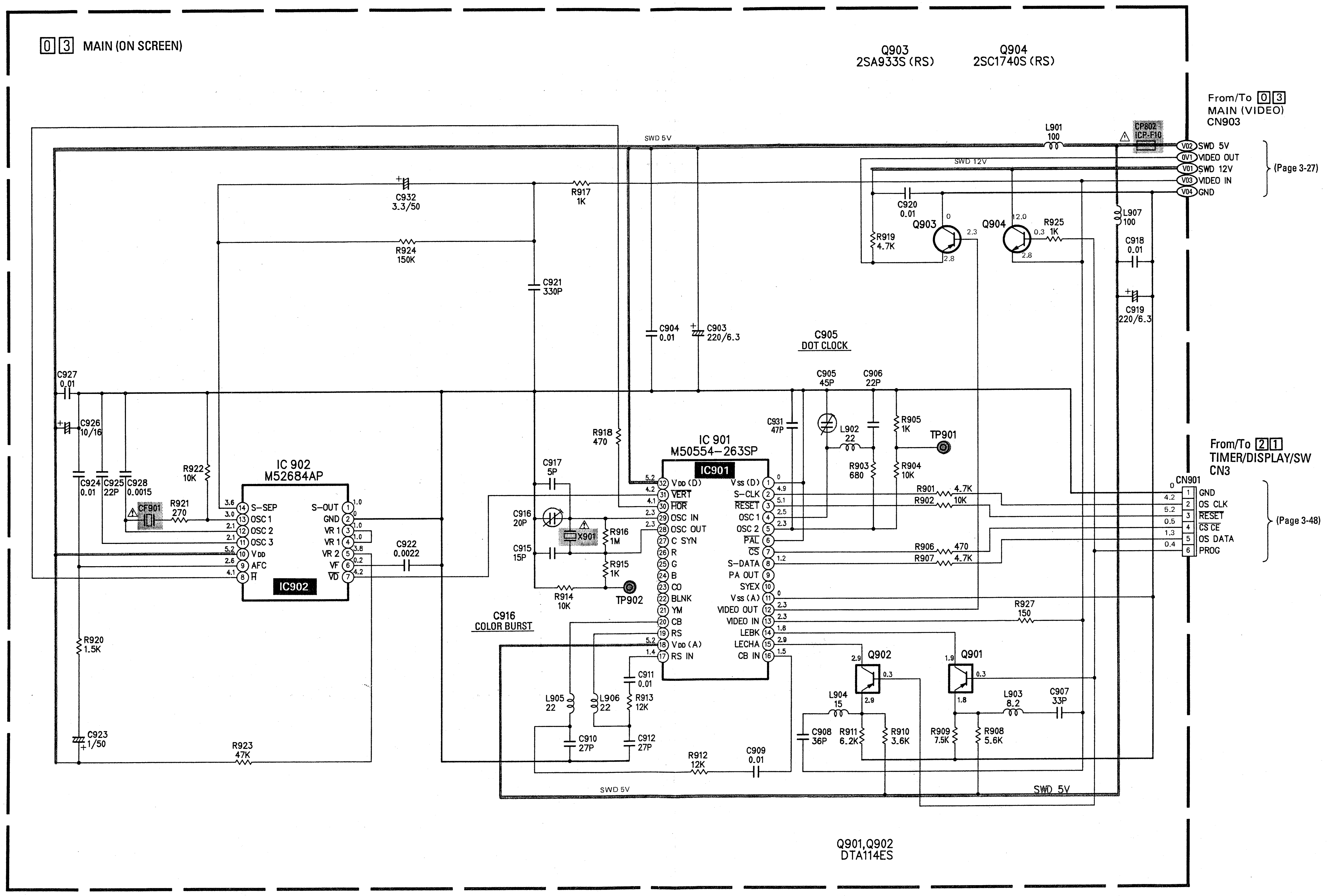
PB 60 mVp-p
REC 0.15 Vp-p
03 MAIN(VIDEO)
IC280
IC280 BA7106LS
Q201, Q202 2SC1740S(RS)
CN205
fsc
SPCL PB
EE
SP
APT CTL
RENT
EDIT
AUX
V. PULSE
NC
COMP SYNC
LP
CCIR
From/To 05 VIDEO UNIT CN1 (Page 3-40)
D215
SWD 5V
CN206
SWD 5V
FROM COMB
FOR COMB
COMB RETURN
GND
REC FM
PB FM
B-ID
COLOR ROT
REC COLOR
PB FM COLOR
From/To 05 VIDEO UNIT CN2 (Page 3-40)
D281
From/To 03 MAIN (ON SCREEN) (Page 3-32)
SWD 12V
SWD 5V
VIDEO OUT
VIDEO IN
GND
V01
V02
V03
0V1
V04
CN207
PB VIDEO IN
AGC OUT
AGC IN
PB COLOR OUT
PB COLOR IN
A MUTE
AUX OUT
TNR VIDEO OUT
VIDEO IN
From/To 05 VIDEO UNIT CN3 (Page 3-40)
SV3 SPCL PB
SV2 V PULSE
VS1 fsc
VS2 COMP SYNC
VS3 VIDEO FM
SV1 DRUM FF
NC APT CTL
MV12 RENTAL
MV11 EDIT
MV2 EE
MV1 SP
MV15 HEAD SEL
MV8 P MUTE
MV7 AUX
MV14 AUTO/MAN/SLOW
MV5 A MUTE
MV10 TEXT
MV3 REC
MV13 VIDEO IN
MV4 REC START
From/To 03 MAIN (SERVO) (Page 3-24)
From/To 03 MAIN (MECHACON) (Page 3-25, 3-26)
R213 2.2K
R256 2.4K
D213
D214
R287 5.6K
CN201
COMP SYNC
GND
PB FM
REC FM COLOR
PB FM COLOR
GND
From/To 43 PRE/REC CN1 (Page 3-52)
PB 0.24 Vp-p
CN202
AUTO/MAN/SLOW
SP
DRUM FF
SWD 5V
REC START
COLOR ROT
HEAD SEL
From/To 43 PRE/REC CN2 (Page 3-52)
REC 0.15 Vp-p
TP206 PB FM
Q222
VT2 VIDEO OUT
VT3 GND
TV1 VIDEO IN
VT1 RF VIDEO OUT
From/To 03 MAIN (TERMINAL) (Page 3-35)
PB 0.24 Vp-p
CN203
VIDEO OUT
GND
GND
VIDEO IN
From/To 36 JACK CN201 (Page 3-50)
RV1 SWD 5V
RV3 GND
RV2 SWD 12V
From 03 MAIN (REGULATOR) (Page 3-20)
SWD 12V
SP REC COLOR LEVEL
PB 60 mVp-p
TP205 REC COLOUR
TP210 VIDEO OUT
REC/PB 1.0 Vp-p
EQ201
Q206
Q207
Q210
Q211
Q213
Q214
Q218
Q218 2SC1740S(RS)
Q206, Q207 2SC1740S(RS)
Q210, Q211 2SA933S(RS)
Q213 2SC1740S(RS)
Q214 2SA933S(RS)
Q222 DTC124ES
MESECAM DET
SECAM DET
L282
D280
TP244
A
B
C
D
E
F
G
H
1
2
3
4
5

3.15 AUDIO SCHEMATIC DIAGRAM

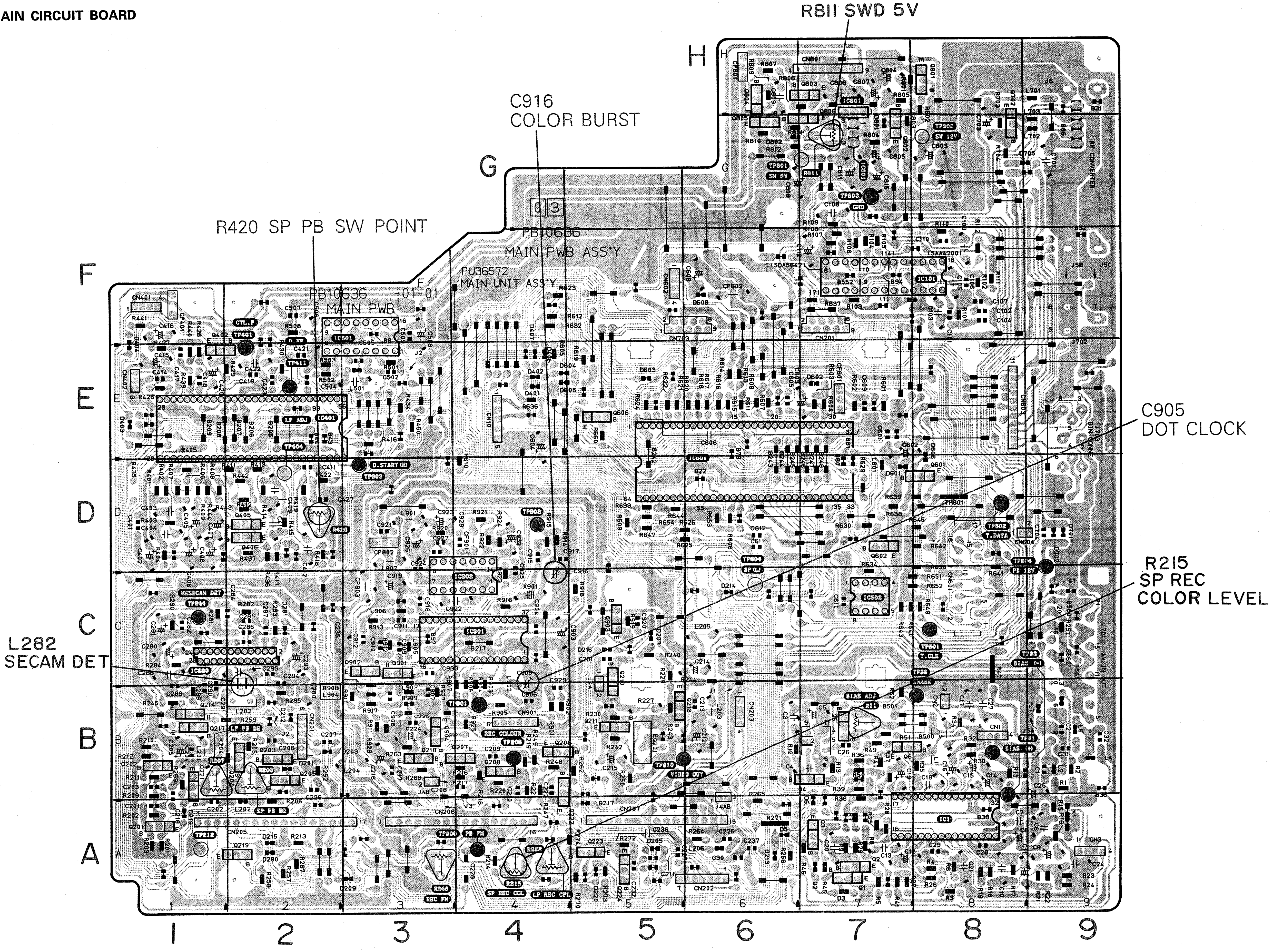


PB 1.5 Vp-p
REC 80 mVp-p
REC 2.5 Vp-p
REC 3.5 Vp-p
03 MAIN(AUDIO)
From 03 MAIN (MECHACON) (Page 3-25)
MUTE MA9
SP MA6
EE MA8
REC START MA7
REC MA5
TNR AUDIO IN MA4
AUX MA10
From/To 36 JACK CN202 (Page 3-50)
CN3
AUDIO OUT 1
GND 2
GND 3
AUDIO IN 4
From 03 MAIN (REGULATOR) (Page 3-20)
GND RA2
SWD 12V RA1
From/To 03 MAIN (TERMINAL) (Page 3-35)
RF OUT AT2
GND AT1
AUDIO OUT AT3
AUDIO(L) IN TA1
AUDIO(R) IN TA2
12 A/C HEAD
R/P HEAD
A.E HEAD
F.E HEAD
CN1
CN2
Q1 2SC1740S(RS)
Q2 2SC1740S(RS)
Q3 DTA114ES
Q4 2SC1740S(RS)
Q5 DTA124ES
Q6 DTA144ES
D2 1SS133
D3 RD5.1E9-T1B2
IC1 BA7765AS
IC 1
T1
B501
TP31
TP32
BIAS (+) (-)
TP33 ERASE
R47 4.7K
R46 4.7K
R45 2.2K
R3 47K
R4 2.4K
R5 10K
R6 2.4K
R7 1K
R8 470
R9 470
R10 10
R51 8.2K
R53 8.2K
R52 33K
R12 15K
R13 6.8
R49 47K
R50 10K
C34 100P
C21 0.0027
C33 100P
C31 0.0012
C1 560P
C2 560P
C20 0.018
C26 330p
C27 0.047
C3 0.0027
C4 0.0039
C5 4.7/25
C25 10/16
C6 0.0012
C29 220P
C13 0.1
C14 33/16
C15 0.1/50
C16 1/50
C17 0.015
C19 10/16
L1 10m
L2 3.3
L3 3.3
L4 2.2
L5 470
L7 3.3
L9 0.33
L10 1.0
R1 5.6K
R2 5.6K
R30 10K
R32 33K
R34 150
R36 3.3K
R37 27K
ALC
LINE 36dB
PB
REC
EQ1
EQ2
REC CTRL
V.REG
Vcc
MUTE 0dB
EQ1 + EQ2
DIGITAL TRANSISTOR
5
4
3
2
1
A
B
C
D
E
F
G
H

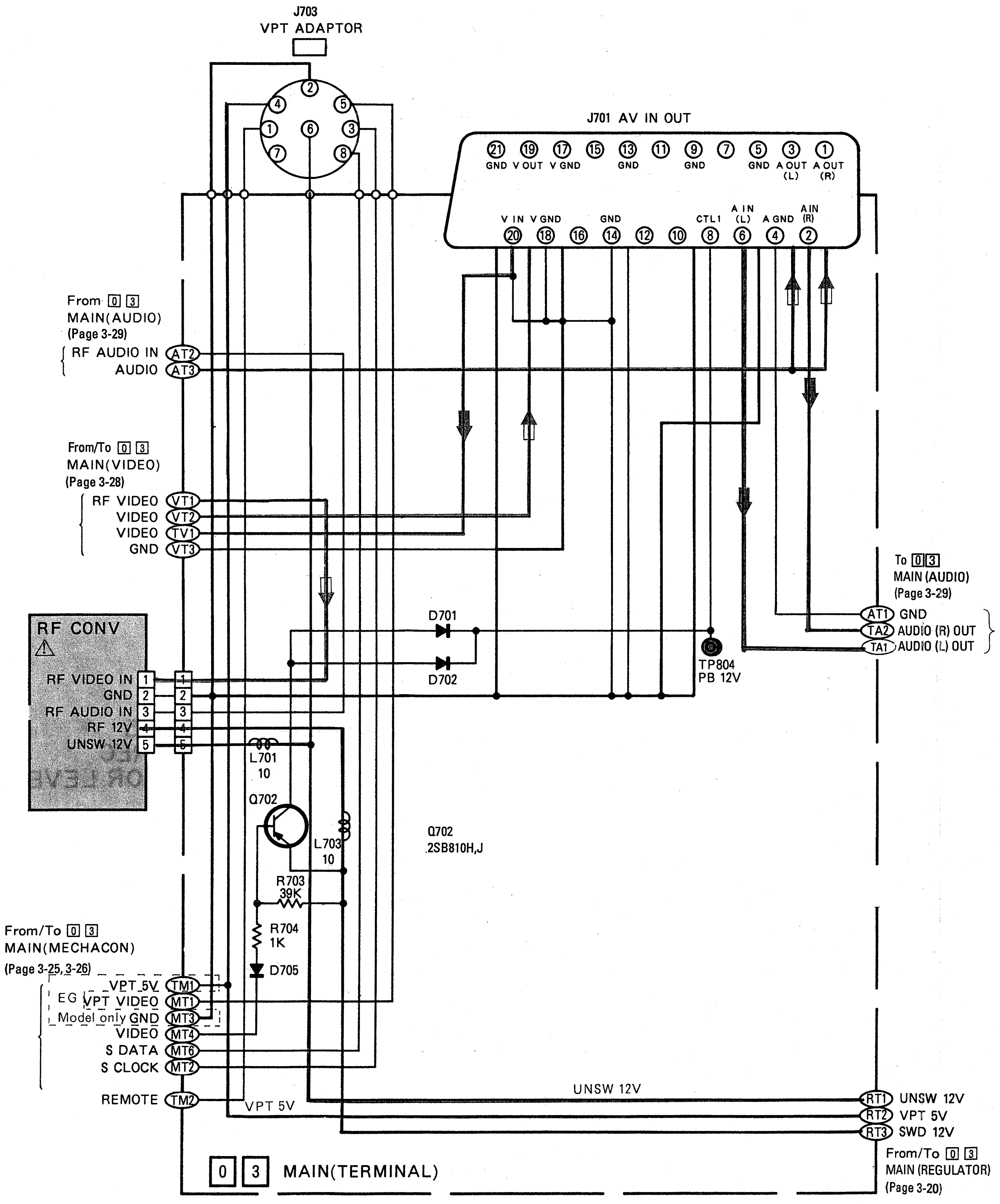
3.16 ON SCREEN SCHEMATIC DIAGRAM


0 3 MAIN (ON SCREEN)
Q903 2SA933S (RS)
Q904 2SC1740S (RS)
From/To 0 3 MAIN (VIDEO) CN903
V02 SWD 5V
0V1 VIDEO OUT
V01 SWD 12V
V03 VIDEO IN
V04 GND
(Page 3-27)
CP802 ICP-F10
L901 100
SWD 5V
SWD 12V
C932 3.3/50
R917 1K
R924 150K
C921 330P
C920 0.01
R919 4.7K
R925 1K
L907 100
C918 0.01
C919 220/6.3
C904 0.01
C903 220/6.3
C905 DOT CLOCK
C905 45P
C906 22P
C931 47P
L902 22
R905 1K
TP901
R903 680
R904 10K
C927 0.01
C926 10/16
C924 0.01
C925 22P
C928 0.0015
CF901
R921 270
R922 10K
IC 902 M52684AP
IC902
S-SEP
OSC 1
OSC 2
OSC 3
VDD
AFC
H
S-OUT
GND
VR 1
VR 1
VR 2
VF
VD
C922 0.0022
R918 470
C917 5P
C916 20P
C915 15P
X901
R916 1M
R915 1K
R914 10K
TP902
C916 COLOR BURST
IC 901 M50554-263SP
IC901
VDD (D)
VERT
HOR
OSC IN
OSC OUT
C SYN
R
G
B
CO
BLNK
YM
CB
RS
VDD (A)
RS IN
VSS (D)
S-CLK
RESET
OSC 1
OSC 2
PAL
CS
S-DATA
PA OUT
SYEX
VSS (A)
VIDEO OUT
VIDEO IN
LEBK
LECHA
CB IN
R901 4.7K
R902 10K
R906 470
R907 4.7K
R927 150
From/To 2 1 TIMER/DISPLAY/SW CN3
CN901
GND
OS CLK
RESET
CS CE
OS DATA
PROG
(Page 3-48)
Q902
Q901
L904 15
L903 8.2
C907 33P
C908 36P
R911 6.2K
R910 3.6K
R909 7.5K
R908 5.6K
L905 22
L906 22
C911 0.01
R913 12K
C910 27P
C912 27P
R912 12K
C909 0.01
R920 1.5K
C923 1/50
R923 47K
SWD 5V
Q901,Q902 DTA114ES

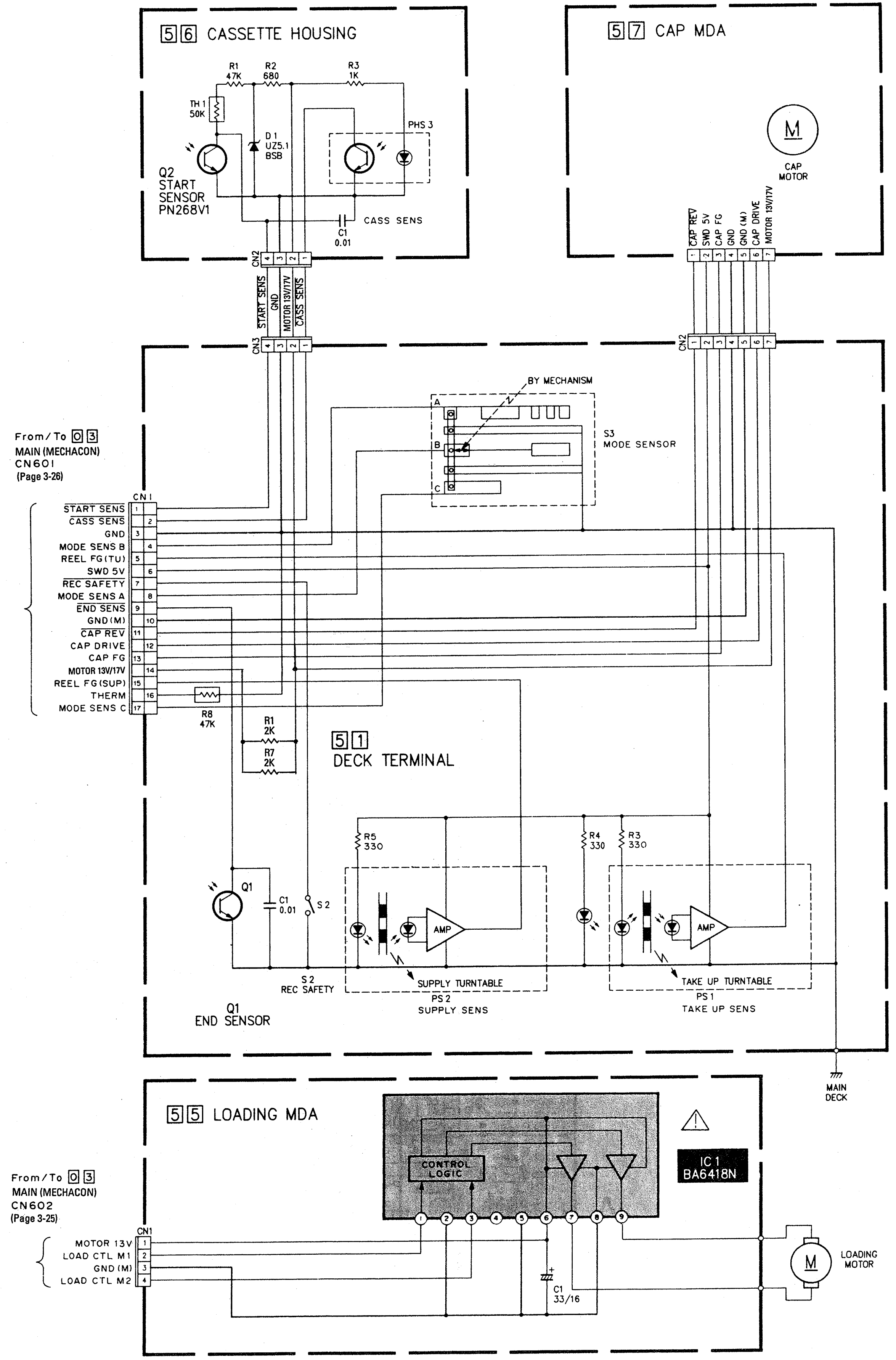
3.17 MAIN CIRCUIT BOARD


R811 SWD 5V
C916
COLOR BURST
R420 SP PB SW POINT
C905
DOT CLOCK
R215
SP REC
COLOR LEVEL
L282
SECAM DET
PB10636
MAIN PWB ASS'Y
PU36572
MAIN UNIT ASS'Y
PB10636 -01-01
MAIN PWB
RF CONVERTER
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9

3.18 TERMINAL SCHEMATIC DIAGRAM

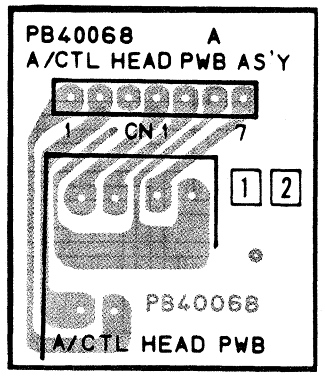

J703
VPT ADAPTOR
J701 AV IN OUT
㉑ ⑲ ⑰ ⑮ ⑬ ⑪ ⑨ ⑦ ⑤ ③ ①
GND V OUT V GND GND GND GND A OUT (L) A OUT (R)
A IN (L)
A IN (R)
V IN V GND GND CTL1 A GND
⑳ ⑱ ⑯ ⑭ ⑫ ⑩ ⑧ ⑥ ④ ②
From 0 3
MAIN(AUDIO)
(Page 3-29)
RF AUDIO IN AT2
AUDIO AT3
From/To 0 3
MAIN(VIDEO)
(Page 3-28)
RF VIDEO VT1
VIDEO VT2
VIDEO TV1
GND VT3
To 0 3
MAIN (AUDIO)
(Page 3-29)
AT1 GND
TA2 AUDIO (R) OUT
TA1 AUDIO (L) OUT
RF CONV
⚠
RF VIDEO IN 1
GND 2
RF AUDIO IN 3
RF 12V 4
UNSW 12V 5
D701
D702
TP804
PB 12V
L701
10
Q702
L703
10
Q702
2SB810H,J
R703
39K
R704
1K
D705
From/To 0 3
MAIN(MECHACON)
(Page 3-25, 3-26)
VPT 5V TM1
EG VPT VIDEO MT1
Model only GND MT3
VIDEO MT4
S DATA MT6
S CLOCK MT2
REMOTE TM2
VPT 5V
UNSW 12V
RT1 UNSW 12V
RT2 VPT 5V
RT3 SWD 12V
From/To 0 3
MAIN (REGULATOR)
(Page 3-20)
0 3 MAIN(TERMINAL)

3.19 DECK TERMINAL, LOADING MDA, CAPSTAN MOTOR, CAPSTAN MDA AND CASS HOUSING SCHEMATIC DIAGRAMS

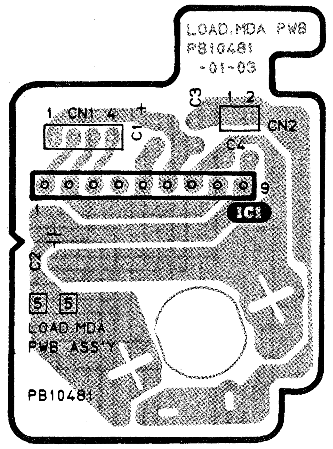

5 6 CASSETTE HOUSING
R1
47K
R2
680
R3
1K
TH 1
50K
D 1
UZ5.1
BSB
PHS 3
Q2
START
SENSOR
PN268V1
CASS SENS
C1
0.01
CN2
START SENS
GND
MOTOR 13V/17V
CASS SENS
CN3
5 7 CAP MDA
M
CAP MOTOR
CAP REV
SWD 5V
CAP FG
GND
GND (M)
CAP DRIVE
MOTOR 13V/17V
CN2
BY MECHANISM
A
B
C
S3
MODE SENSOR
From/To 0 3
MAIN (MECHACON)
CN601
(Page 3-26)
CN1
START SENS 1
CASS SENS 2
GND 3
MODE SENS B 4
REEL FG(TU) 5
SWD 5V 6
REC SAFETY 7
MODE SENS A 8
END SENS 9
GND(M) 10
CAP REV 11
CAP DRIVE 12
CAP FG 13
MOTOR 13V/17V 14
REEL FG(SUP) 15
THERM 16
MODE SENS C 17
R8
47K
R1
2K
R7
2K
5 1
DECK TERMINAL
R5
330
R4
330
R3
330
Q1
C1
0.01
S2
AMP
AMP
S2
REC SAFETY
SUPPLY TURNTABLE
PS2
SUPPLY SENS
TAKE UP TURNTABLE
PS1
TAKE UP SENS
Q1
END SENSOR
MAIN DECK
5 5 LOADING MDA
⚠
IC1
BA6418N
CONTROL LOGIC
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
From/To 0 3
MAIN (MECHACON)
CN602
(Page 3-25)
CN1
MOTOR 13V 1
LOAD CTL M1 2
GND (M) 3
LOAD CTL M2 4
C1
33/16
M
LOADING MOTOR

3.20 DECK TERMINAL, LOADING MDA, A/CTL HEAD, CASS HOUSING CIRCUIT BOARDS

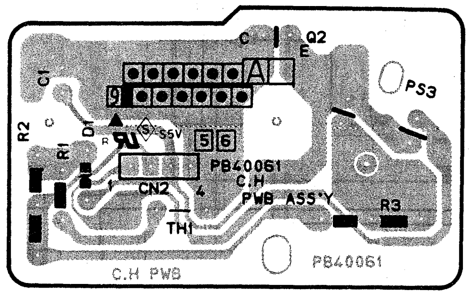
— A/CTL HEAD —


PB40068 A
A/CTL HEAD PWB AS'Y
1 CN1 7
1 2
PB40068
A/CTL HEAD PWB

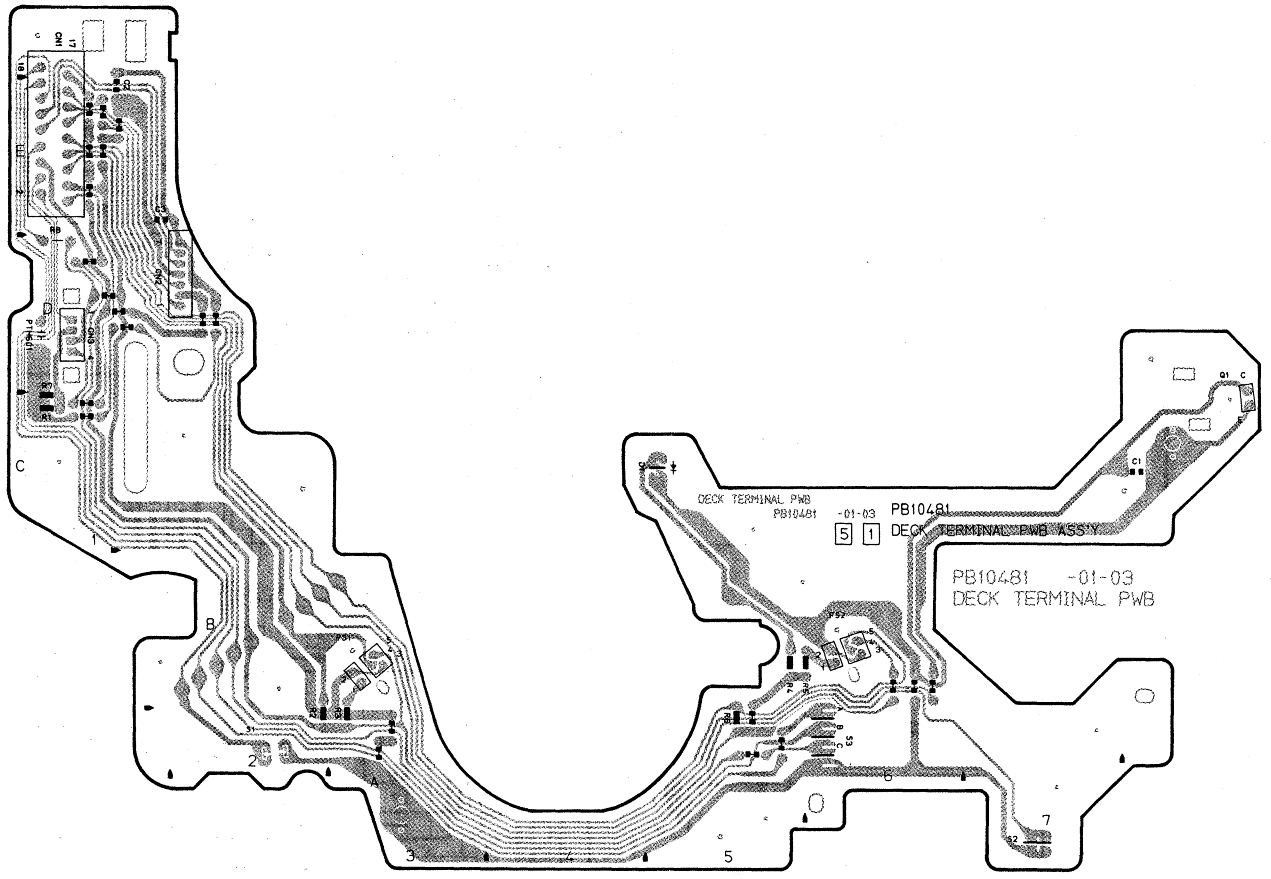
— LOADING MDA —


LOAD.MDA PWB
PB10481
-01-03
1 CN1 4
C1
C3
1 2
CN2
C4
9
IC1
C2
5 5
LOAD.MDA
PWB ASS'Y
PB10481

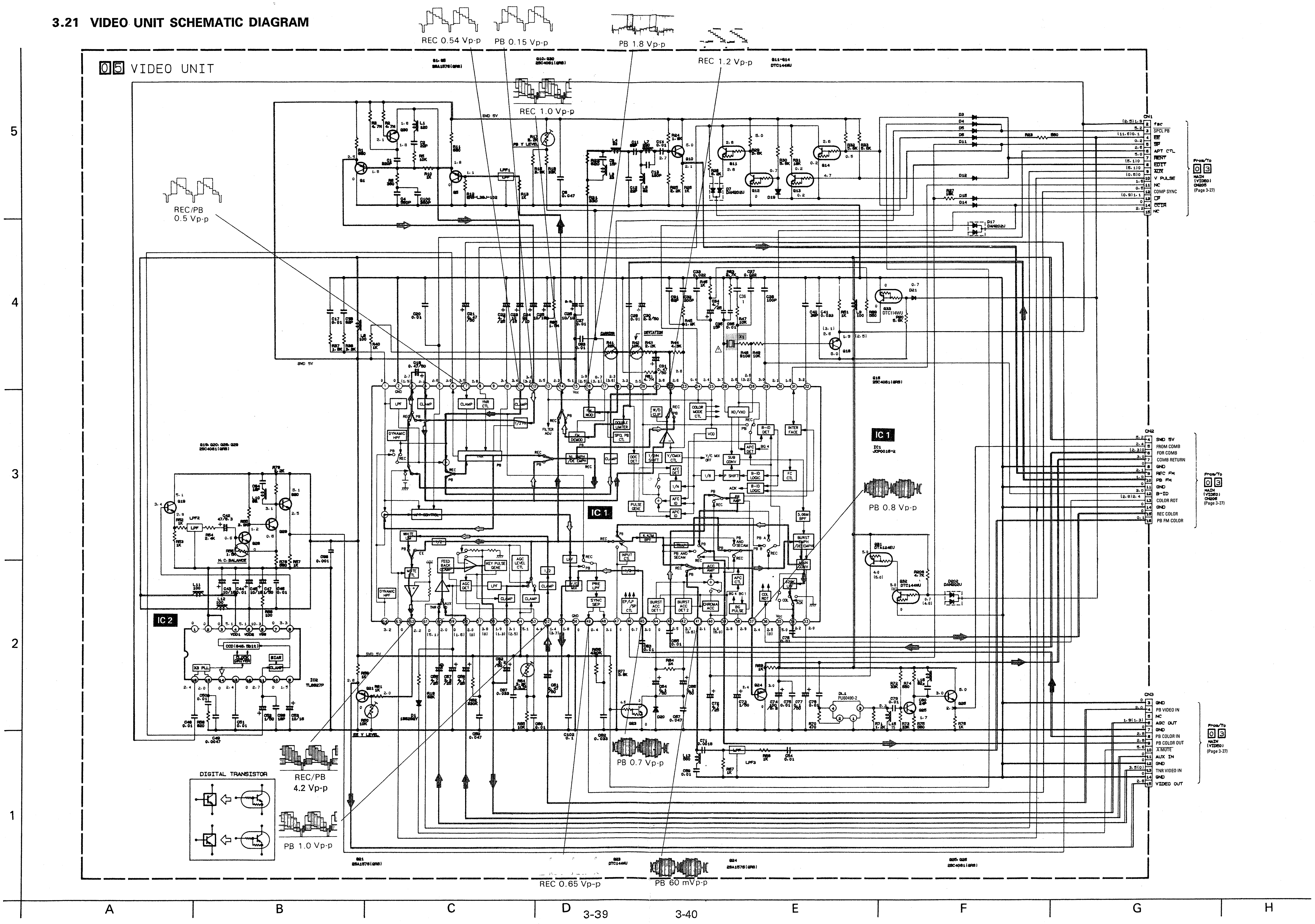
— CASSETTE HOUSING —


C
Q2
E
PS3
C1
9
A
R2
D1
R1
55V
5 6
PB40061
C.H
PWB ASS'Y
CN2
4
TH1
R3
C.H PWB
PB40061

— DECK TERMINAL —


DECK TERMINAL PWB
PB10481 -01-03
PB10481
5 1
DECK TERMINAL PWB ASS'Y
PB10481 -01-03
DECK TERMINAL PWB
A
B
C
1
2
3
5
6
7

3.21 VIDEO UNIT SCHEMATIC DIAGRAM


05 VIDEO UNIT
REC 0.54 Vp-p
PB 0.15 Vp-p
PB 1.8 Vp-p
REC 1.2 Vp-p
REC 1.0 Vp-p
REC/PB
0.5 Vp-p
PB 0.8 Vp-p
PB 0.7 Vp-p
REC/PB
4.2 Vp-p
PB 1.0 Vp-p
REC 0.65 Vp-p
PB 60 mVp-p
IC 1
IC1
JCP0018-2
IC 2
IC2
TL8827P
Q1, Q5
2SA1576(QRS)
Q10, Q20
2SC4081(QRS)
Q11-Q14
DTC144WU
Q19, Q20, Q26, Q29
2SC4081(QRS)
Q18
2SC4081(QRS)
Q21
2SA1576(QRS)
Q23
DTC144WU
Q24
2SA1576(QRS)
Q25, Q28
2SC4081(QRS)
DIGITAL TRANSISTOR
CCD(845.5bit)
CLOCK DRIVER
BIAS
CLAMP
X3 PLL
N.C. BALANCE
SWD 5V
PB Y LEVEL
REC Y LEVEL
DEVIATION
CARRIER
FILTER ADJ
CN1
(2.5)1.9 2 fsc
5.2 3 SPCL PB
(11.6)0.1 4 EE
0.2 5 SP
2.6 6 APT CTL
5.0 7 RENT
(5.1)0 8 EDIT
(5.1)0 9 AUX
(0.5)0 10 V PULSE
1.5 11 NC
0.5 12 COMP SYNC
(0.9)1.1 13 CF
0 14 CCIR
2.2 15 NC
From/To
03
MAIN
(VIDEO)
CN205
(Page 3-27)
CN2
5.2 4 SWD 5V
2.4 5 FROM COMB
(2.3)0 6 FOR COMB
3.0 7 COMB RETURN
0 8 GND
2.1 9 REC FM
1.9 10 PB FM
0 11 GND
3.0 12 B-ID
(2.8)2.4 13 COLOR ROT
0 14 GND
0 15 REC COLOR
0.1 16 PB FM COLOR
From/To
03
MAIN
(VIDEO)
CN206
(Page 3-27)
CN3
0 3 GND
2.0 4 PB VIDEO IN
5 NC
1.9(1.3) 6 AGC OUT
0 7 GND
2.8 8 PB COLOR IN
2.8 9 PB COLOR OUT
5.6 10 A MUTE
0 11 AUX IN
0 12 GND
3.5(0) 13 TNR VIDEO IN
0 14 GND
2.8 15 VIDEO OUT
From/To
03
MAIN
(VIDEO)
(Page 3-22)
5
4
3
2
1
A
B
C
D
E
F
G
H

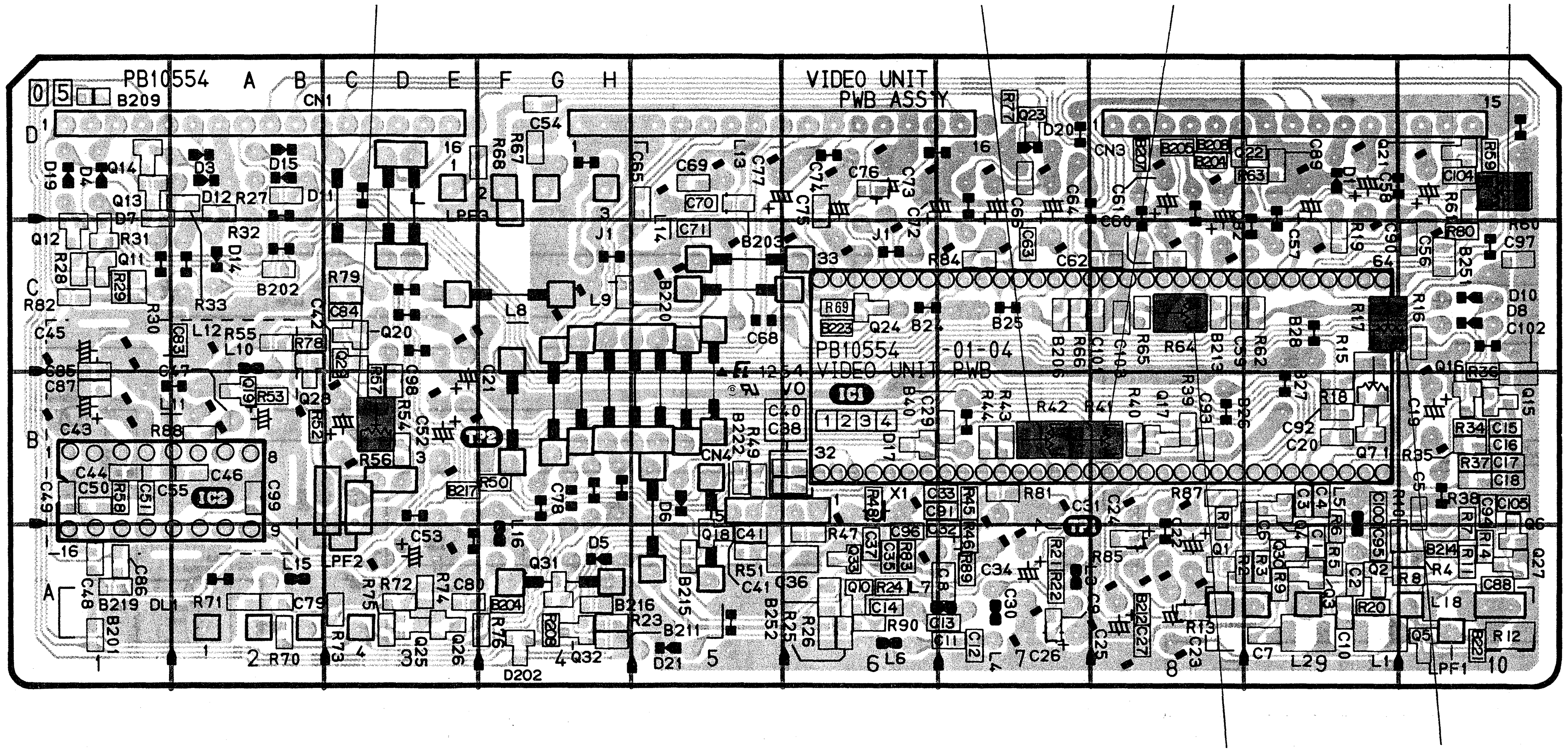
3.22 VIDEO UNIT CIRCUIT BOARD

R56
NC BALANCE

R42
DEVIATION

R41
CARRIER

R60
EE Y LEVEL



R64
WHITE CLIP

R17
PB Y LEVEL

- Location of SMC parts

1D
Location

REF. No.	LOCATION
TRANSISTOR	
Q1	8A
Q5	10A
Q10	6A
Q11	1C
Q12	1C
Q13	1D
Q14	1D
Q18	5A
Q19	2B
Q20	3C
Q21	10D
Q23	7D
Q24	6C
Q25	3A
Q26	3A
Q28	2B
Q29	3C
Q30	9A
Q31	4A
Q32	4A
Q33	6A

REF. No.	LOCATION
DIODE	
D7	1C
D17	6B
D202	4A

REF. No.	LOCATION
COIL	
L1	9A

REF. No.	LOCATION
RESISTOR	
R1	8A
R2	9A
R3	9A
R5	9A
R6	9A
R10	10A
R11	10A
R12	10A
R13	8A
R16	10C
R17	9C
R18	9B
R19	9C
R21	7A
R22	7A
R23	4A
R24	6A
R25	6A
R26	6A
R27	2D
R28	1C
R29	1C
R30	1C
R31	1C
R32	2D
R33	2D

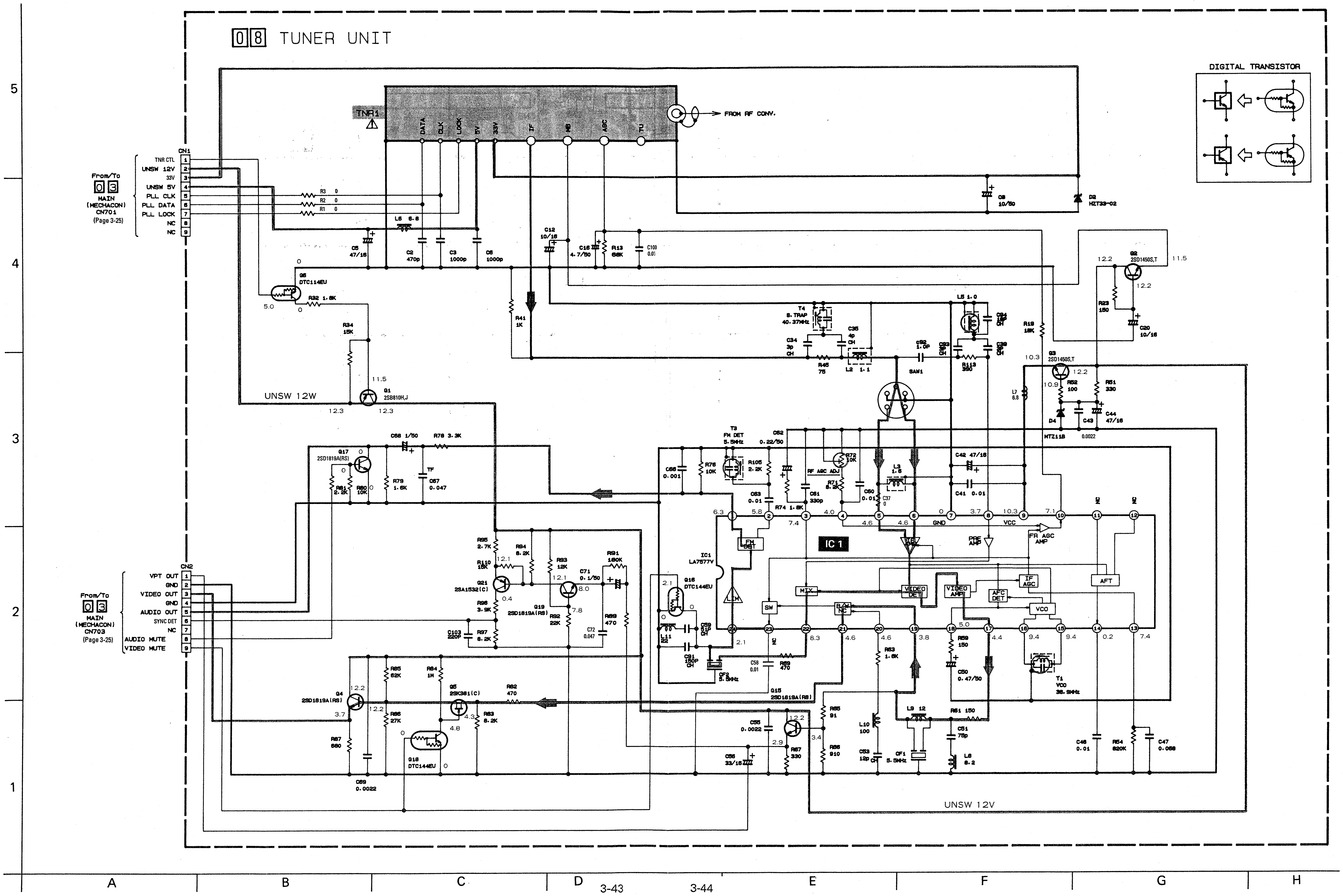
REF. No.	LOCATION
RESISTOR	
R37	10B
R38	10B
R40	8B
R41	8B
R42	7B
R43	7B
R44	7B
R45	7B
R46	7A
R47	6A
R48	6B
R49	5B
R51	5A
R52	2B
R53	2B
R54	3B
R55	2C
R56	3B
R57	3B
R58	1B
R59	10D
R60	10D
R61	10D
R62	9C
R64	8C
R65	8C

REF. No.	LOCATION
RESISTOR	
R66	7C
R67	4D
R68	4D
R69	6C
R70	2A
R71	2A
R72	3A
R73	3A
R74	3A
R75	3A
R76	4A
R77	7D
R78	2C
R79	3C
R81	7B
R83	6A
R84	7C
R85	8A
R88	2B
R89	7A
R90	6A
R208	4A

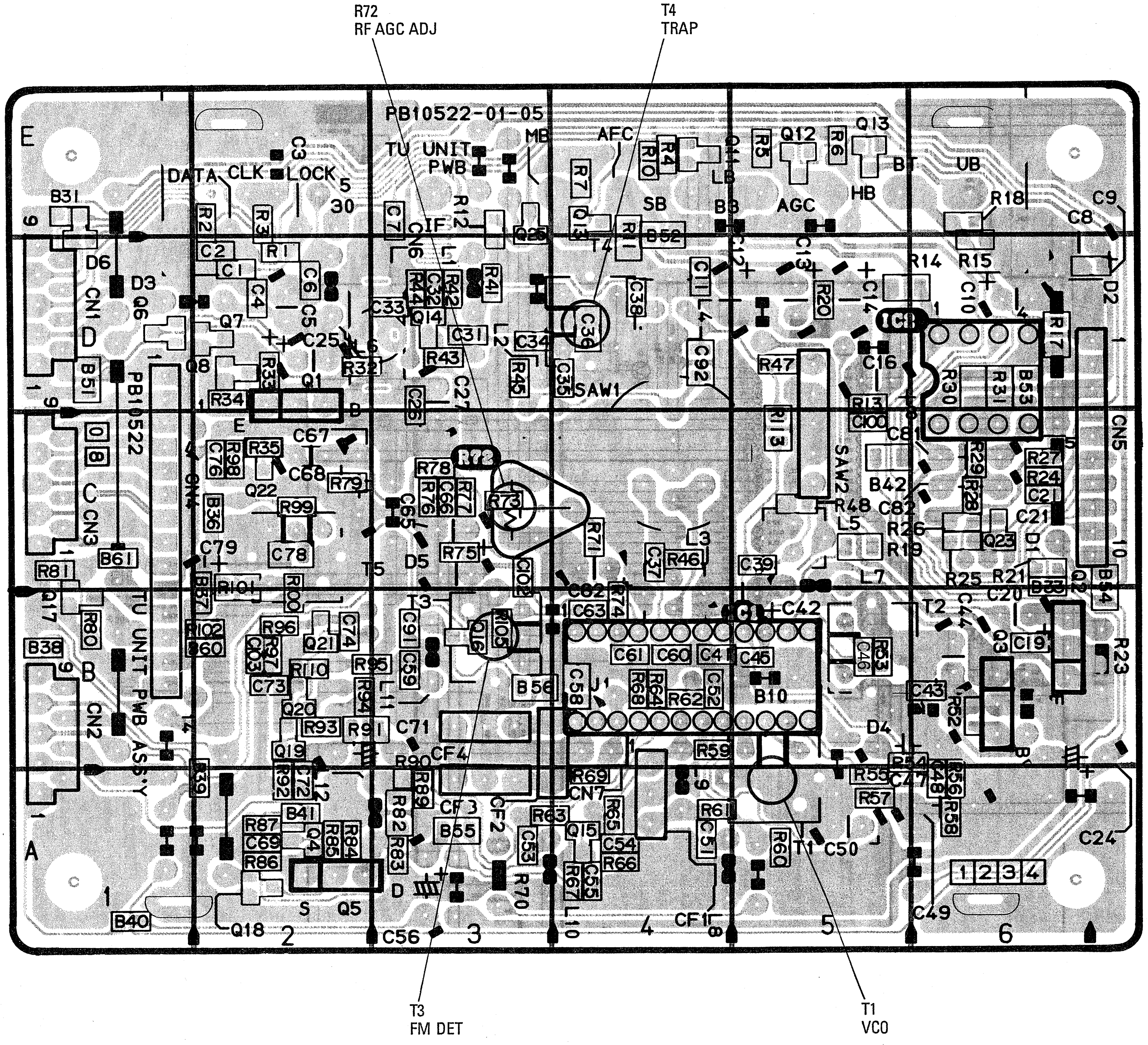
REF. No.	LOCATION
CAPACITOR	
C1	9A
C2	9A
C4	9B
C8	7A
C9	7A
C11	7A
C12	7A
C13	7A
C14	6A
C17	10B
C18	10B
C20	9B
C27	8A
C29	7B
C32	7A
C33	7B
C35	6A
C36	6A
C37	6A
C38	6B
C40	6B
C41	5A
C44	1B
C46	2B
C48	1A
C49	1B

REF. No.	LOCATION
CAPACITOR	
C50	1B
C51	1B
C54	4D
C59	8C
C60	8C
C62	8C
C63	7C
C65	5D
C67	7D
C69	5D
C71	5C
C75	6D
C76	6D
C79	2A
C80	3A
C84	3C
C91	7B
C93	8B
C96	6A
C97	10C
C98	3B
C99	2B
C100	9B
C102	10B

3.23 TUNER UNIT SCHEMATIC DIAGRAM


08 TUNER UNIT
DIGITAL TRANSISTOR
TNR1
DATA
CLK
LOCK
5V
33V
IF
MB
AGC
TU
FROM RF CONV.
From/To
03
MAIN
(MECHACON)
CN701
(Page 3-25)
CN1
TNR CTL
UNSW 12V
33V
UNSW 5V
PLL CLK
PLL DATA
PLL LOCK
NC
NC
R3 0
R2 0
R1 0
L6 6.8
C5 47/16
C2 470p
C3 1000p
C6 1000p
C12 10/16
C16 4.7/50
R13 68K
C100 0.01
C8 10/50
D2 HZT33-02
Q6 DTC114EU
R32 1.8K
R34 15K
Q1 2SB810H,J
UNSW 12W
R41 1K
Q2 2SD1450S,T
R23 150
C20 10/16
Q3 2SD1450S,T
R19 18K
R52 100
R51 330
C44 47/16
C43 0.0022
D4 MTZ11B
L7 6.8
T4 S.TRAP 40.37MHz
C34 3p CH
C35 4p CH
R45 75
L2 1.1
C62 1.0P
SAW1
L5 1.0
R113 390
T3 FM DET 5.5MHz
C82 0.22/50
R105 2.2K
RF AGC ADJ
R72 10K
R71 8.2K
C61 330p
C63 0.01
C60 0.01
C37
L3 1.8
C42 47/16
C41 0.01
R74 1.8K
C66 0.001
R76 10K
IC 1
IC1 LA7577V
FM DET
LIM
SW
MIX
B/W NC
VIDEO DET
VIDEO AMP
AFC DET
IF AGC
VCO
AFT
GND
VCC
RF AGC AMP
PRE AMP
NC
Q16 DTC144EU
L11 22
C59 51P CH
C91 150P CH
CF2 5.5MHz
C58 0.01
R89 470
R69 150
R63 1.8K
C50 0.47/50
T1 VCO 38.9MHz
Q17 2SD1819A(RS)
C68 1/50
R78 3.3K
R61 2.2K
R80 10K
R79 1.8K
C67 0.047
TF
From/To
03
MAIN
(MECHACON)
CN703
(Page 3-25)
CN2
VPT OUT
GND
VIDEO OUT
GND
AUDIO OUT
SYNC DET
NC
AUDIO MUTE
VIDEO MUTE
R95 2.7K
R110 18K
R94 8.2K
R93 12K
C71 0.1/50
R91 180K
Q21 2SA1532(C)
R96 3.9K
Q19 2SD1819A(RS)
R92 22K
C72 0.047
R99 470
C103 220P
R97 8.2K
Q4 2SD1819A(RS)
R85 82K
R84 1M
Q5 2SK381(C)
R82 470
R86 27K
R63 8.2K
R87 680
Q18 DTC144EU
C89 0.0022
Q15 2SD1819A(RS)
C55 0.0022
R65 91
R66 910
R67 330
C56 33/16
L10 100
C53 12p CH
CF1 5.5MHz
L9 12
R61 150
C51 75p
L8 8.2
C46 0.01
R54 820K
C47 0.068
UNSW 12V
1
2
3
4
5
A
B
C
D
E
F
G
H

3.24 TUNER UNIT CIRCUIT BOARD



- Location of SMC parts

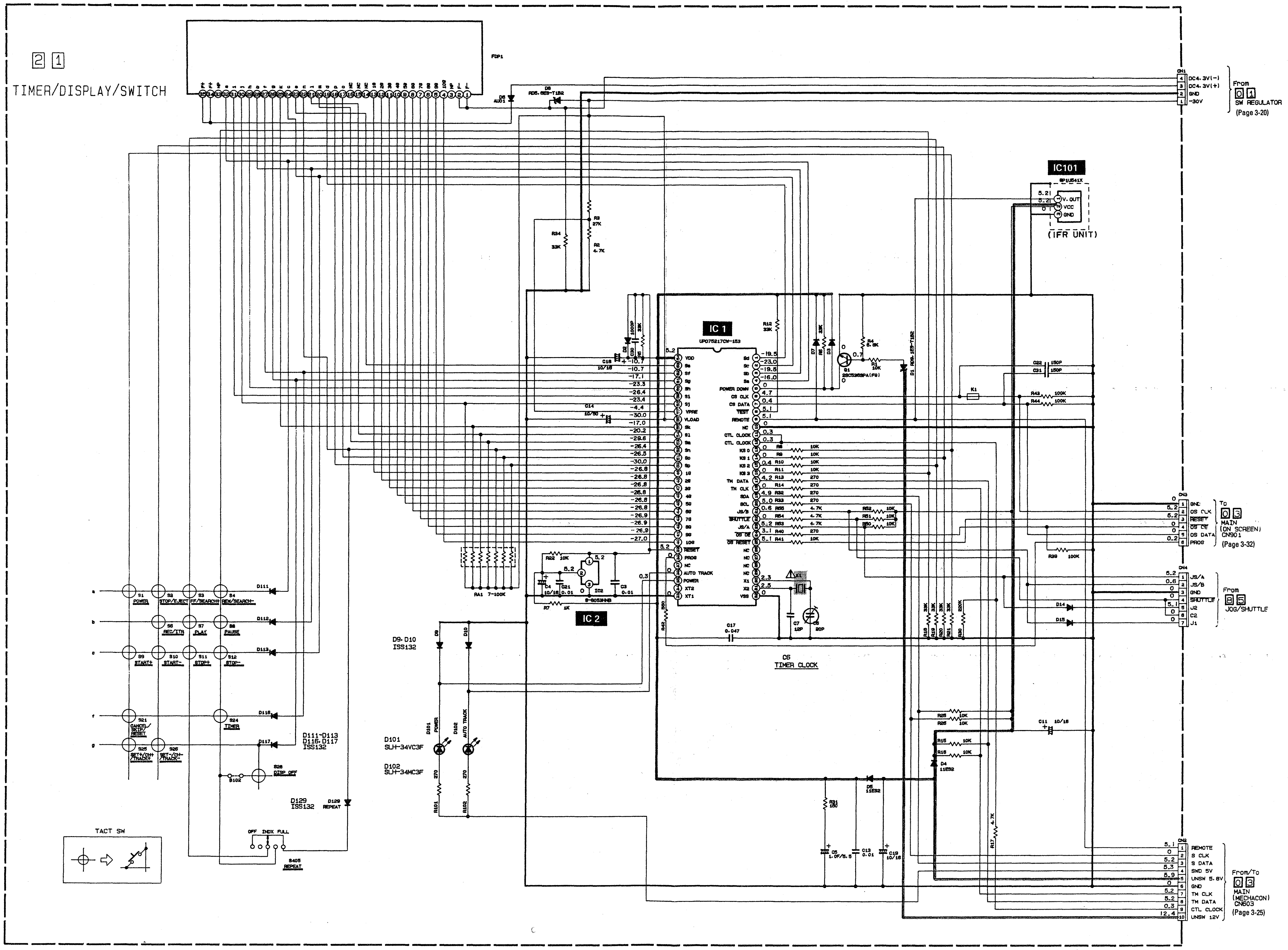
1D
└ Location

REF. No.	LOCATION
TRANSISTOR	
Q4	2A
Q6	1D
Q15	4A
Q16	3B
Q17	1B
Q18	2A
Q19	2B
Q21	2B

REF. No.	LOCATION
RESISTOR	
R1	2D
R2	2E
R3	2E
R13	5D
R19	5C
R32	2D
R34	2D
R41	3D
R45	3D
R52	6B
R54	5B
R59	4B
R61	4A
R63	4A
R65	4A
R66	4A
R67	4A
R69	4A
R71	4C
R72	3C
R74	4B
R76	3C
R78	3C
R79	2C
R80	1B
R81	1C
R82	3A
R83	3A
R84	2A
R85	2A
R86	2A
R87	2A
R89	3A
R91	2B
R92	2A
R93	2B
R94	2B
R95	2B
R96	2B
R97	2B
R105	3B
R110	2B
R113	5C

REF. No.	LOCATION
CAPACITOR	
C2	2D
C6	2D
C34	3D
C35	4D
C37	4C
C39	5C
C41	4B
C43	6A
C48	6A
C51	4A
C53	3A
C55	4A
C58	4B
C59	3B
C60	4B
C61	4B
C63	4B
C66	3C
C69	2A
C72	2A
C91	3B
C92	4D
C100	5C
C103	2B

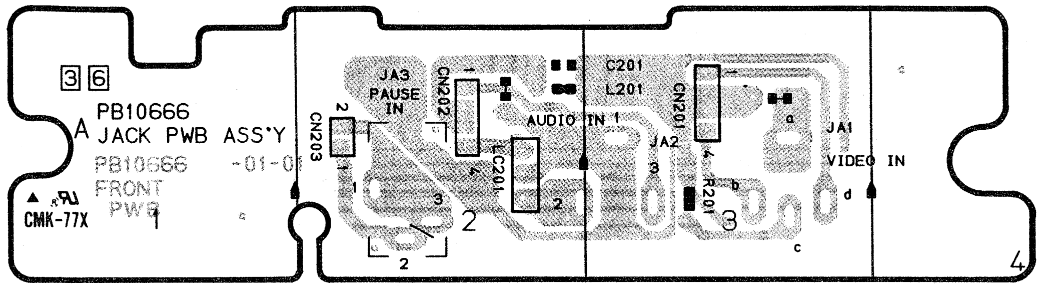
3.25 TIMER/DISPLAY/SWITCH SCHEMATIC DIAGRAM



2 1
TIMER/DISPLAY/SWITCH
FDP1
IC 1
UPD75217CW-153
IC 2
S-8053HNB
IC101
GP1U541X
(IFR UNIT)
V. OUT
VCC
GND
CN1
DC4.3V(-)
DC4.3V(+)
GND
-30V
From
0 1
SW REGULATOR
(Page 3-20)
CN3
GND
OS CLK
RESET
OS CE
OS DATA
PROG
To
0 3
MAIN
(ON SCREEN)
CN901
(Page 3-32)
CN4
JS/A
JS/B
GND
SHUTTLE
J2
C2
J1
From
0 5
JOG/SHUTTLE
CN2
REMOTE
S CLK
S DATA
SWD 5V
UNSW 5.8V
GND
TM CLK
TM DATA
CTL CLOCK
UNSW 12V
From/To
0 3
MAIN
(MECHACON)
CN603
(Page 3-25)
VDD
POWER DOWN
OS CLK
OS DATA
TEST
REMOTE
CTL CLOCK
TM DATA
TM CLK
SDA
SCL
JS/B
SHUTTLE
JS/A
OS CE
OS RESET
RESET
PROG
AUTO TRACK
POWER
XT2
XT1
X1
X2
VSS
VPRE
VLOAD
C6
TIMER CLOCK
Q1
2SC536SPA(F8)
D6
RD5.6ES-T1B2
D1 RD5.1ES-T1B2
R3 27K
R2 4.7K
R34 33K
R12 33K
R4 6.8K
R1 10K
C22 150P
C21 150P
R43 100K
R44 100K
R39 100K
R22 10K
R7 1K
RA1 7-100K
C17 0.047
C7 12P
C8 20P
C3 0.01
C21 0.01
C4 10/16
C18 10/16
C14 10/50
C11 10/16
C5 1.0F/5.5
C13 0.01
C19 10/16
R31 100
D5 11ES2
D4 11ES2
D14
D15
R17 4.7K
R25 10K
R26 10K
R15 10K
R16 10K
S1 POWER
S2 STOP/EJECT
S3 FF/SEARCH+
S4 REW/SEARCH-
S6 REC/ITR
S7 PLAY
S8 PAUSE
S9 START+
S10 START-
S11 STOP+
S12 STOP-
S21 CANCEL/SKIP/RESET
S24 TIMER
S25 SET+/CH+/TRACK+
S26 SET-/CH-/TRACK-
S28 DISP OFF
B102
D111
D112
D113
D116
D117
D111-D113
D116,D117
ISS132
D129
ISS132
D129 REPEAT
OFF INDX FULL
S405 REPEAT
D9-D10
ISS132
D101
SLH-34VC3F
D102
SLH-34MC3F
D101 POWER
D102 AUTO TRACK
R101 270
R102 270
TACT SW
6
5
4
3
2
1
A
B
C
D
E
F
G
H

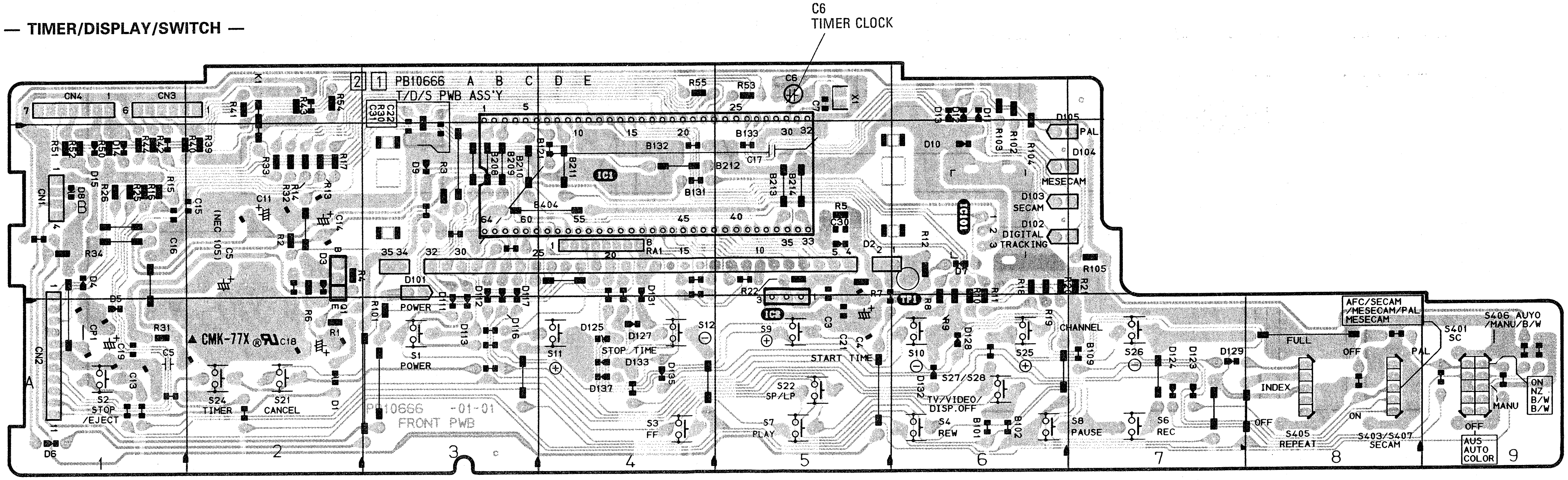
3.26 TIMER/DISPLAY/SWITCH AND JACK CIRCUIT BOARDS

— JACK —



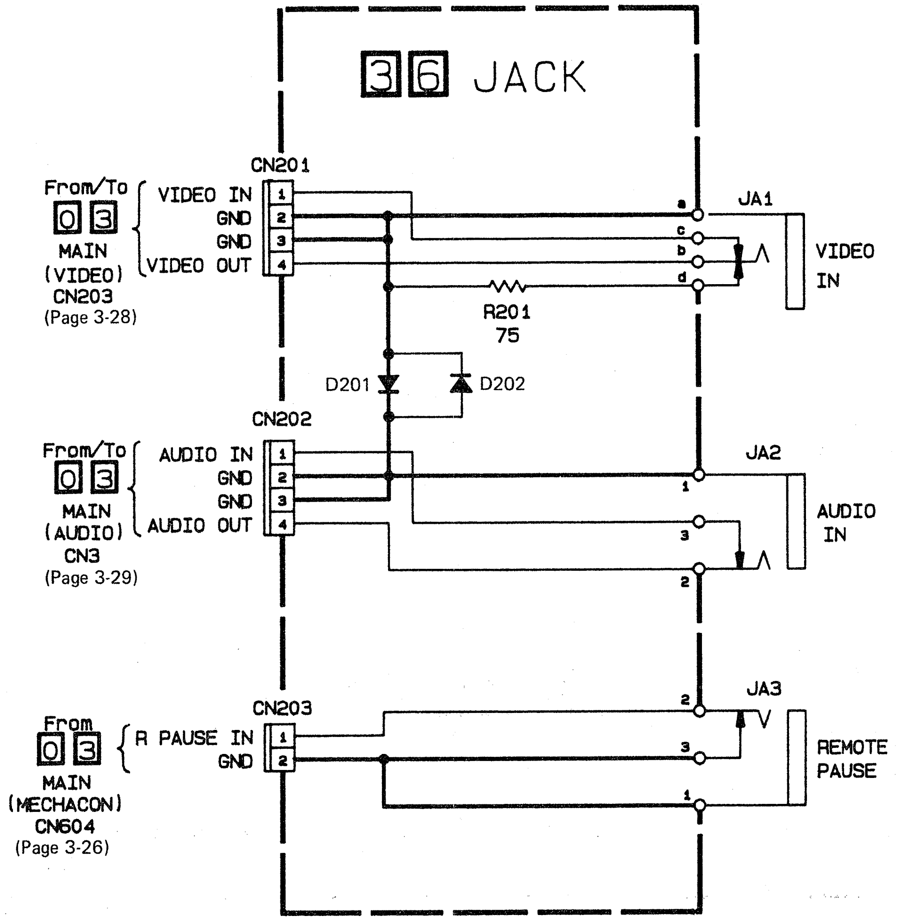
36
A
PB10666
JACK PWB ASS'Y
PB10666 -01-01
FRONT PWB
CMK-77X
CN203
JA3
PAUSE IN
CN202
C201
L201
AUDIO IN
JA2
CN201
R201
JA1
VIDEO IN
1
2
3
4

— TIMER/DISPLAY/SWITCH —



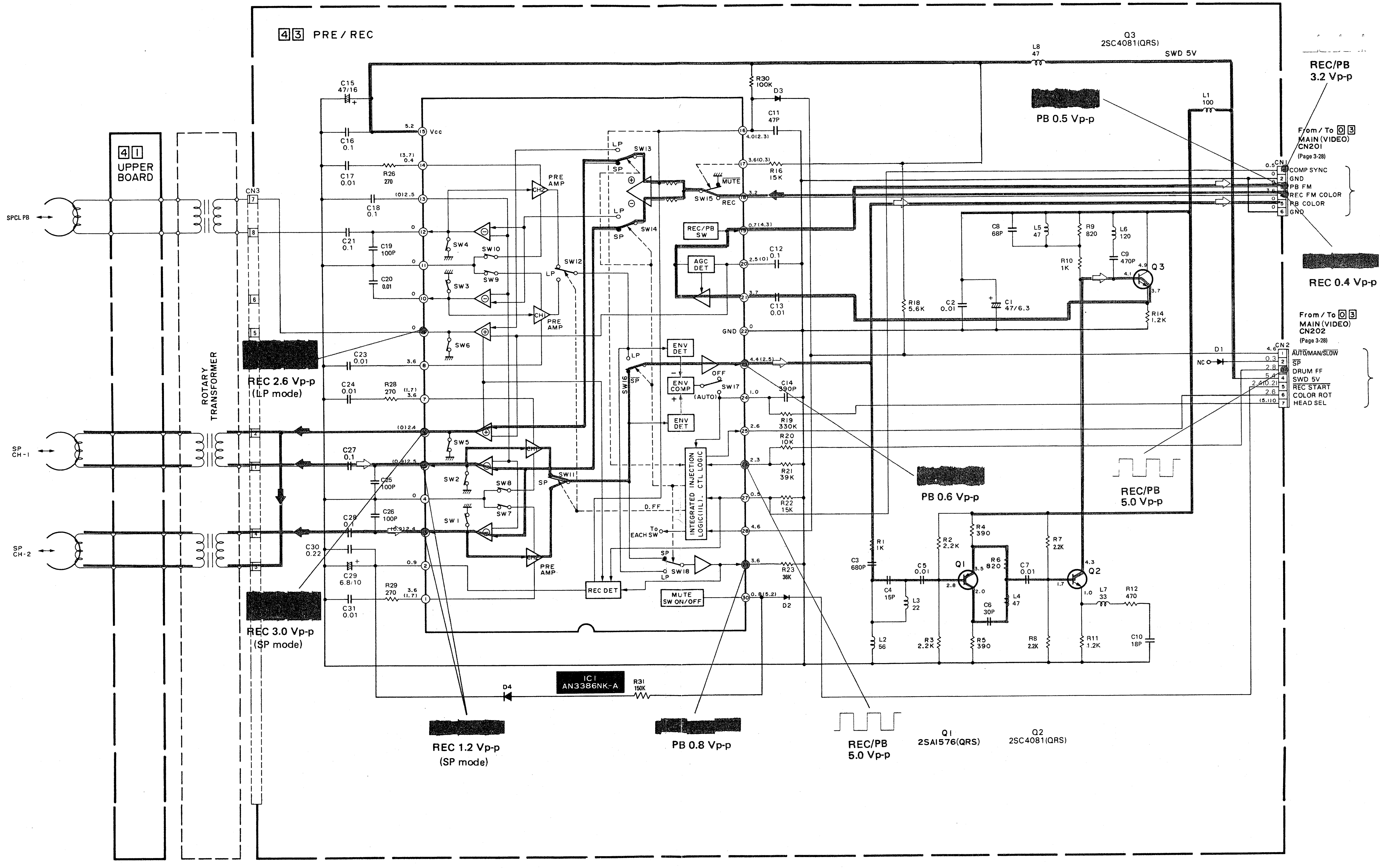
C6
TIMER CLOCK
21 PB10666 A B C D E
T/D/S PWB ASS'Y
CN4
CN3
CN1
CN2
IC1
IC3
IC101
X1
TP1
CMK-77X
PB10666 -01-01
FRONT PWB
S2 STOP /EJECT
S24 TIMER
S21 CANCEL
S1 POWER
D101 POWER
S11
S12
STOP TIME
START TIME
S3 FF
S7 PLAY
S9
S10
S22 SP/LP
S27/S28
TV/VIDEO/ DISP.OFF
S4 REW
S8 PAUSE
S25
S26
CHANNEL
S6 REC
FULL
INDEX
OFF
S405 REPEAT
AFC/SECAM /MESECAM/PAL /MESECAM
S401 SC
PAL
S403/S407 SECAM
S406 AUTO /MANU/B/W
ON
NZ
B/W
MANU
AUS AUTO COLOR
D105 PAL
D104
MESECAM
D103 SECAM
D102 DIGITAL TRACKING
1
2
3
4
5
6
7
8
9

3.27 JACK SCHEMATIC DIAGRAM

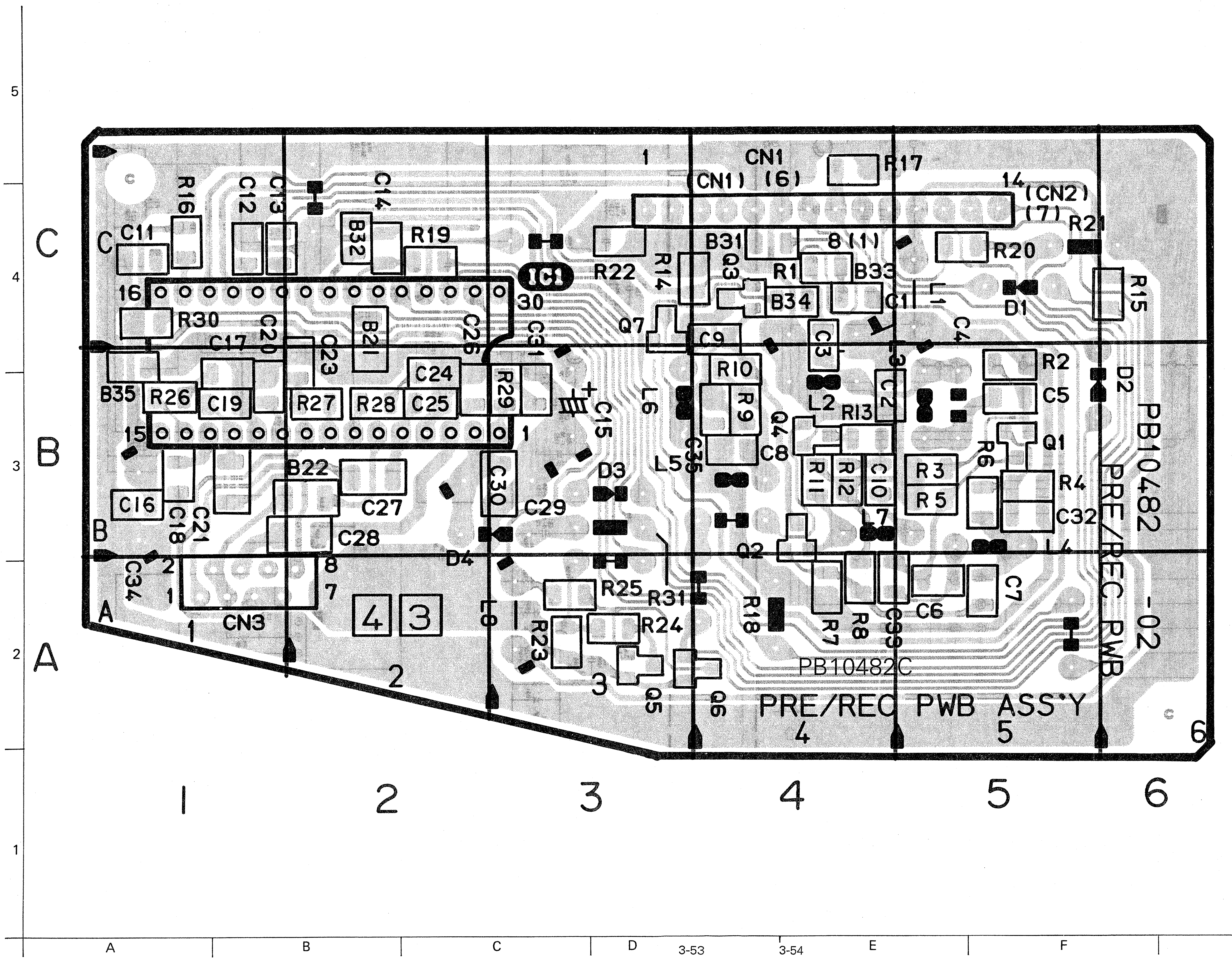


36 JACK
CN201
From/To
03
MAIN (VIDEO) CN203
(Page 3-28)
VIDEO IN
GND
GND
VIDEO OUT
1
2
3
4
JA1
a
c
b
d
VIDEO IN
R201
75
D201
D202
CN202
From/To
03
MAIN (AUDIO) CN3
(Page 3-29)
AUDIO IN
GND
GND
AUDIO OUT
JA2
AUDIO IN
CN203
From
03
MAIN (MECHACON) CN604
(Page 3-26)
R PAUSE IN
GND
JA3
REMOTE PAUSE

3.28 PRE/REC SCHEMATIC DIAGRAM


4 3 PRE / REC
4 1 UPPER BOARD
ROTARY TRANSFORMER
SPCL PB
SP CH-1
SP CH-2
CN3
C15 47/16
C16 0.1
C17 0.01
R26 270
C18 0.1
C21 0.1
C19 100P
C20 0.01
C23 0.01
C24 0.01
R28 270
C27 0.1
C25 100P
C26 100P
C28 0.1
C30 0.22
C29 6.8/10
R29 270
C31 0.01
Vcc
PRE AMP
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
SW9
SW10
SW11
SW12
SW13
SW14
SW15
SW16
SW17
SW18
LP
SP
MUTE
REC
REC/PB SW
AGC DET
ENV DET
ENV COMP
(AUTO)
OFF
INTEGRATED INJECTION LOGIC(IIL). CTL LOGIC
D. FF
To EACH SW
REC DET
MUTE SW ON/OFF
GND
R30 100K
D3
C11 47P
R16 15K
C12 0.1
C13 0.01
C14 390P
R19 330K
R20 10K
R21 39K
R22 15K
R23 36K
D2
D4
R31 150K
IC1 AN3386NK-A
L8 47
Q3 2SC4081(QRS)
SWD 5V
L1 100
C8 68P
L5 47
R9 820
L6 120
C9 470P
R10 1K
R18 5.6K
C2 0.01
C1 47/6.3
R14 1.2K
D1
NC
R1 1K
C3 680P
R2 2.2K
R4 390
R7 2.2K
C5 0.01
R6 820
C7 0.01
C4 15P
L3 22
C6 30P
L4 47
L7 33
R12 470
L2 56
R3 2.2K
R5 390
R8 2.2K
R11 1.2K
C10 18P
Q1
Q2
Q3
PB 0.5 Vp-p
REC/PB 3.2 Vp-p
REC 0.4 Vp-p
REC 2.6 Vp-p (LP mode)
REC 3.0 Vp-p (SP mode)
REC 1.2 Vp-p (SP mode)
PB 0.8 Vp-p
PB 0.6 Vp-p
REC/PB 5.0 Vp-p
REC/PB 5.0 Vp-p
From / To 0 3 MAIN (VIDEO) CN201 (Page 3-28)
CN1
COMP SYNC
GND
PB FM
REC FM COLOR
PB COLOR
GND
From / To 0 3 MAIN (VIDEO) CN202 (Page 3-28)
CN2
AUTO/MAN/SLOW
SP
DRUM FF
SWD 5V
REC START
COLOR ROT
HEAD SEL
Q1 2SA1576(QRS)
Q2 2SC4081(QRS)

3.29 PRE/REC CIRCUIT BOARD


5
4
3
2
1
C
B
A
1
2
3
4
5
6
A
B
C
D
E
F
G
H
CN1
(CN1) (6)
1
14
(CN2)
(7)
8 (1)
R17
R21
R20
R15
D1
D2
R16
C12
C13
C14
B32
R19
C11
IC1
R22
R14
B31
Q3
R1
B33
B34
C1
L1
16
30
R30
C20
B21
C26
C31
Q7
C9
C3
C4
C17
C23
C24
R10
L3
R2
C5
B35
R26
C19
R27
R28
C25
R29
C15
L6
R9
L2
R13
C2
15
1
Q4
C8
R6
Q1
PB10482
PRE/REC PWB
L5
C35
R11
R12
C10
R3
R5
R4
C32
B22
C16
C18
C21
C27
C30
C29
D3
C28
D4
Q2
L7
L4
C34
2
1
8
7
CN3
4
3
R25
R31
R18
R7
R8
C33
C6
C7
-02
L8
R23
R24
Q5
Q6
PB10482C
PRE/REC PWB ASS'Y

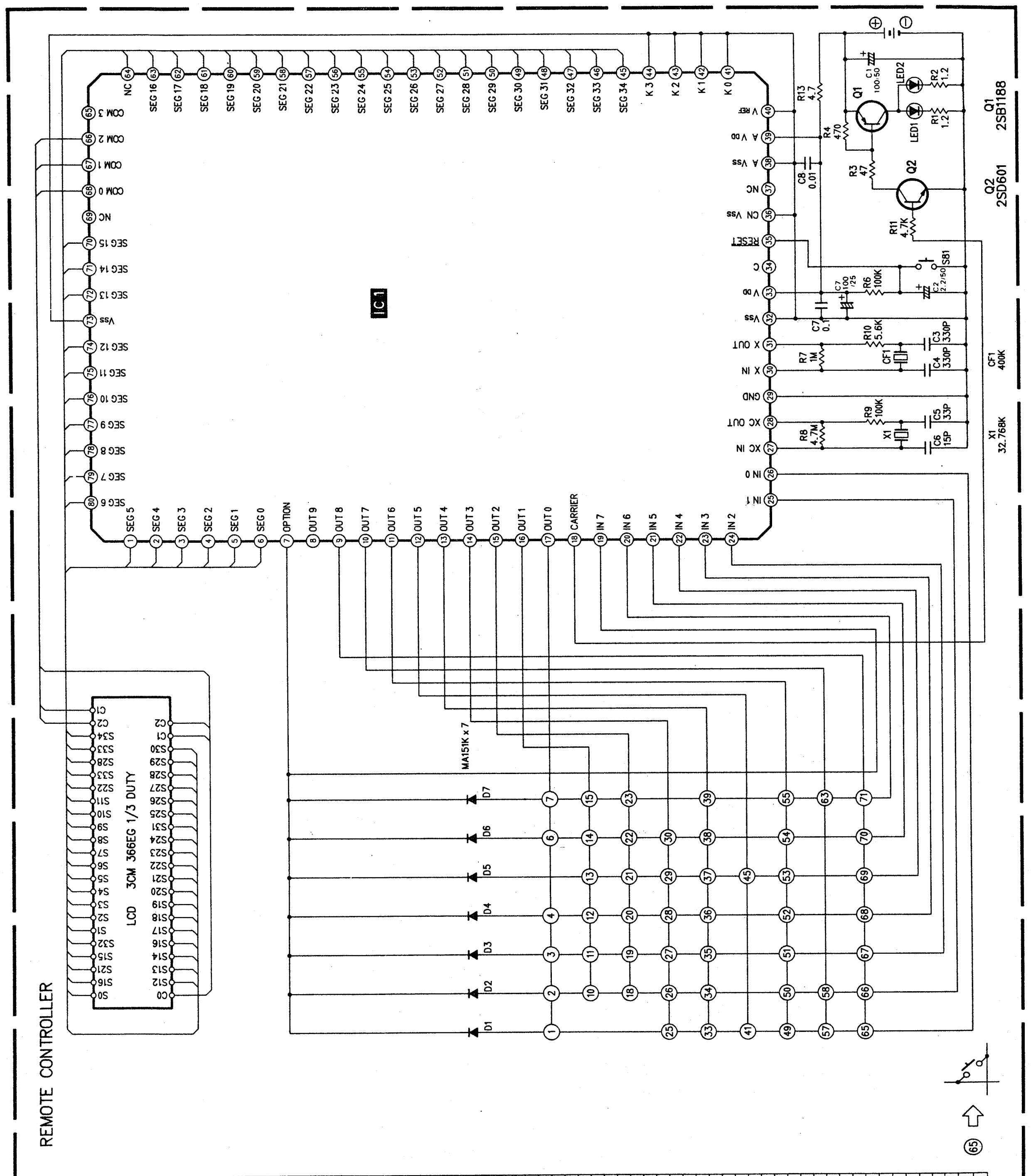
- Location of SMC parts

1D
Location

REF No.	LOCATION
TRANSISTOR	
Q1	5B
Q2	4B
Q3	4C
RESISTOR	
R1	4C
R2	5B
R3	5B
R4	5B
R5	5B
R6	5B
R7	4A
R8	4A
R9	4B
R10	4B
R11	4B
R12	4B
R14	3C
R16	1C
R19	2C
R20	5C
R22	3C
R23	3A
R26	1B
R28	2B
R29	3B
R30	1C
CAPACITOR	
C2	4B
C3	4B
C5	5B
C6	5A
C7	5A
C8	4B
C9	4B
C10	4B
C11	1C
C12	1C
C13	1C
C14	2C
C16	1B
C17	1B
C18	1B
C19	1B
C20	1B
C21	1B
C23	2B
C24	2B
C25	2B
C26	2B
C27	2B
C28	2A
C30	3B
C31	3B

3.30 REMOTE CONTROL SCHEMATIC DIAGRAM

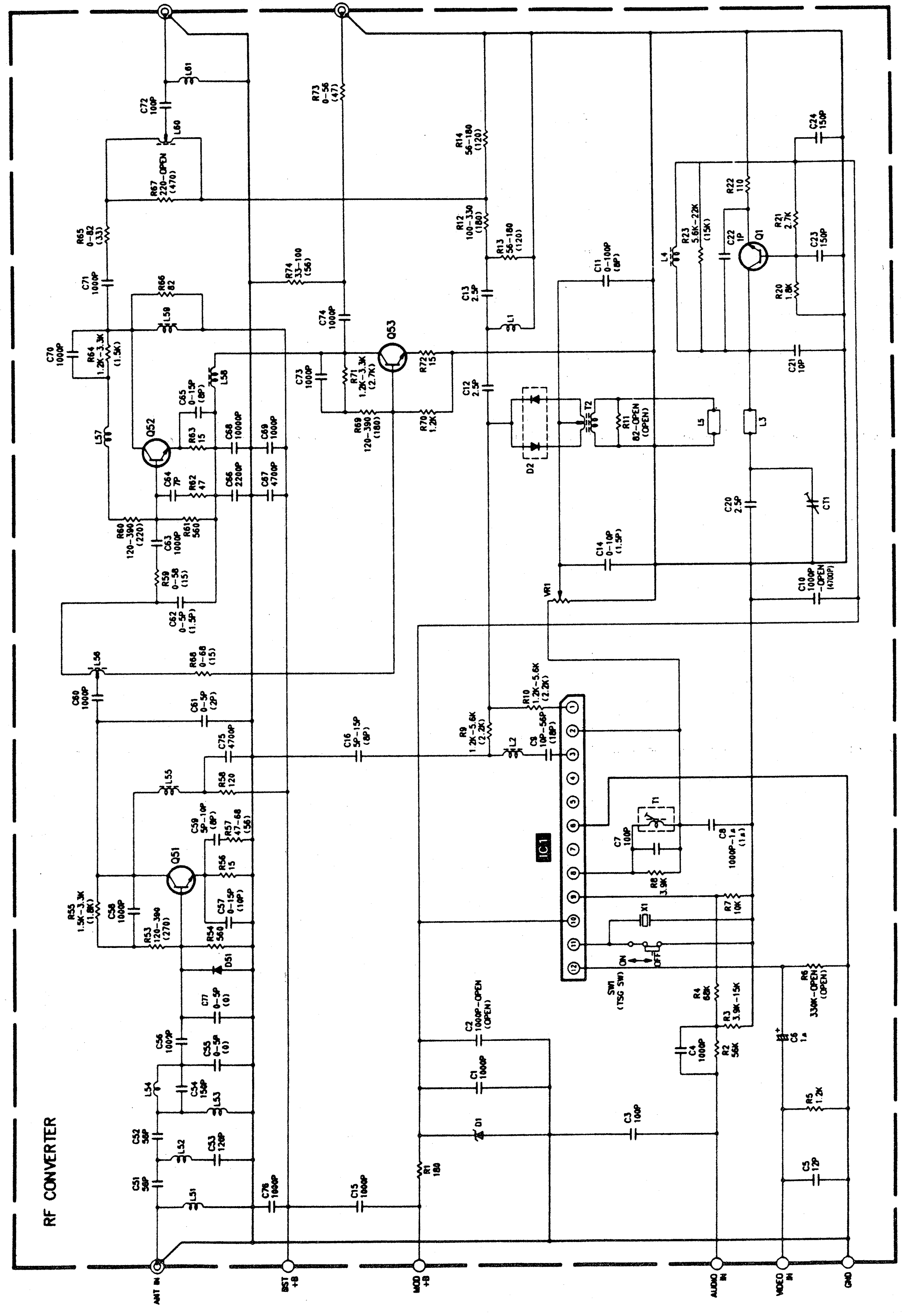
Note:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.


REMOTE CONTROLLER
IC1
LCD 3CM 366EG 1/3 DUTY
MA151K x 7
Q1 2SB1188
Q2 2SD601
CF1 400K
X1 32.768K
SB1
LED1
LED2
R13 4.7
R4 470
R3 47
R11 4.7K
R2 1.2
R1 1.2
C1 100/50
C8 0.01
R6 100K
C2 2.2/50
C7 0.1
R10 5.6K
C3 330P
C4 330P
R7 1M
R9 100K
C5 33P
C6 15P
R8 4.7M
D1
D2
D3
D4
D5
D6
D7
65

KEY NO.	FUNCTION
1	A/B CODE
2	CLOCK ADJ
3	1
4	6
5	
6	MARK
7	EDIT MODE
8	
9	
10	MEMORY PROGRAM
11	2
12	7
13	CH ∨/CURSOR ←
14	EDIT START
15	EDIT STANDBY
16	
17	
18	MEMORY CANCEL
19	3
20	8
21	CH ∧/CURSOR →
22	INDEX/PAGE –
23	ERASE
24	
25	TRANS
26	PROGRAM/ACCESS
27	4
28	9
29	DISPLAY/ROTATE
30	GO-TO/TIMED PAGE
31	
32	
33	TIMER
34	CANCEL/RESET
35	5
36	0/AUX
37	VPS/CH/REVEAL
38	INTRO/PAGE +
39	A MONITOR/LARGE/NORMAL
40	
41	MENY/TEXT
42	
43	
44	
45	CANCEL/RESET
46	
47	
48	
49	STOP/HOLD
50	EJECT
51	FF/BLUE
52	REW/RED
53	REC
54	PLAY/OK/STORE
55	PAUSE/MIX
56	
57	V SEARCH >/YELLOW
58	V SEARCH< /GREEN
59	
60	
61	
62	
63	SKIP/BLANK SEARCH
64	
65	MONITOR TV/VIDEO
66	TV OPERATE
67	TV CH ∨
68	TV CH ∧
69	TV VOL +
70	TV VOL –
71	OPERATE

3.31 RF CONVERTER SCHEMATIC DIAGRAM

NOTES:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
   Avoid replacing individual parts.
   Replace the entire unit only.


RF CONVERTER
TV OUT
VTR OUT
ANT IN
BST +B
MOD +B
AUDIO IN
VIDEO IN
GND
IC1
Q1
Q51
Q52
Q53
D1
D2
D51
T1
T2
VR1
SW1 (TSG SW)
X1
L1
L2
L3
L4
L5
L51
L52
L53
L54
L55
L56
L57
L58
L59
L60
L61
R14 56-180 (120)
R12 100-330 (180)
R13 56-180 (120)
R73 0-56 (47)
R74 33-100 (56)
R71 1.2K-3K (2.2K)
R69 120-390 (180)
R72 15
R70 1.2K
R67 220-OPEN (470)
R65 0-82 (33)
R66 82
R64 1.2K-3.3K (1.5K)
R63 15
R62 47
R60 120-390 (220)
R61 560
R59 0-58 (15)
R68 0-68 (15)
R58 120
R57 47-68 (56)
R56 15
R55 1.5K-3.3K (1.8K)
R53 220-390 (270)
R54 560
R1 180
R2 56K
R3 3.9K-15K
R4 68K
R5 1.2K
R6 330K-OPEN (OPEN)
R7 10K
R8 3.3K
R9 12K-5.6K (2.2K)
R10 1.2K-5.6K (2.2K)
R11 82-OPEN (OPEN)
R20 1.8K
R21 2.7K
R22 110
R23 5.6K-22K (15K)
C1 1000P
C2 1000P-OPEN (OPEN)
C3 100P
C4 1000P
C5 12P
C6 1μ
C7 10P
C8 1000P-1μ (1μ)
C9 10P-56P (18P)
C10 0-OPEN (OPEN)
C11 0-100P (8P)
C12 2.5P
C13 2.5P
C14 0-10P (1.5P)
C15 1000P
C16 5P-15P (8P)
C20 2.5P
C21 10P
C22 1P
C23 150P
C24 150P
C51 56P
C52 56P
C53 120P
C54 1000P
C55 0-5P (0)
C56 1000P
C57 0-15P (10P)
C58 1000P
C59 5P-10P (8P)
C60 1000P
C61 0-5P (2P)
C62 0-5P (1.5P)
C63 1000P
C64 7P
C65 0-15P (8P)
C66 220P
C67 470P
C68 1000P
C69 1000P
C70 1000P
C71 1000P
C72 100P
C73 1000P
C74 1000P
C75 4700P
C76 1000P
C77 0-5P (0)
ON
OFF

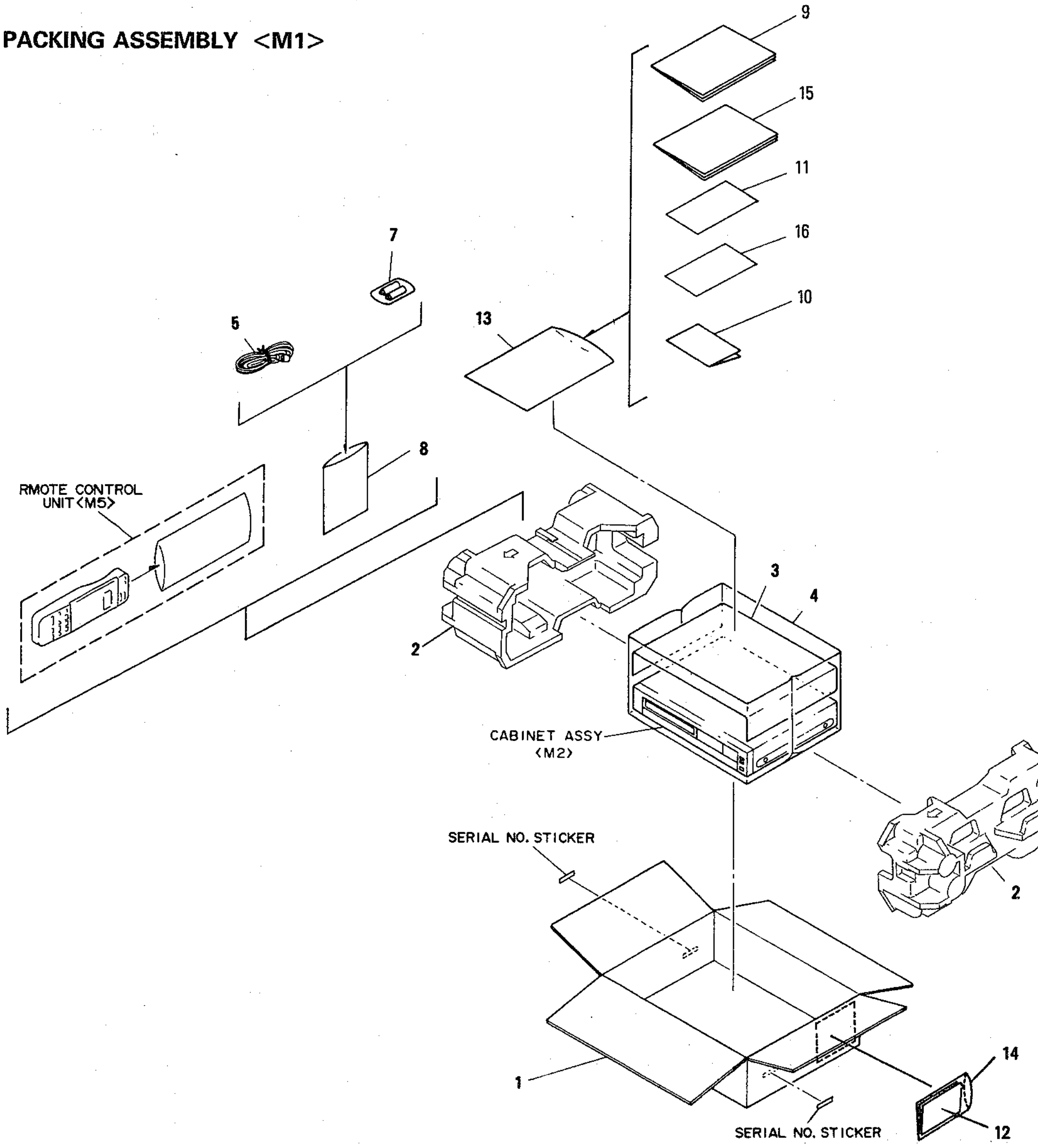
SECTION 4
EXPLODED VIEWS AND PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

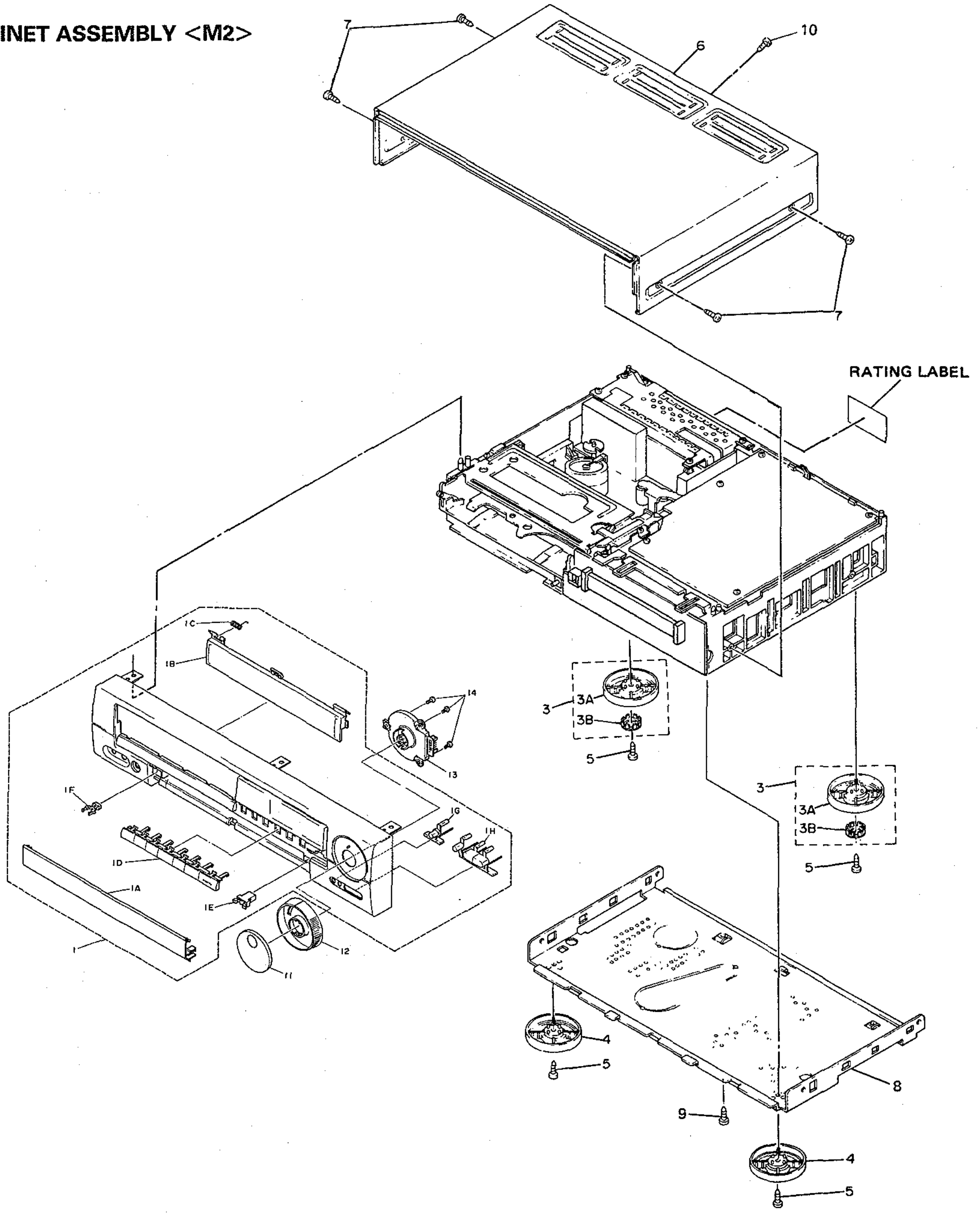
NOTE: <M > indicates mechanical symbol number.

4.1 PACKING ASSEMBLY <M1>


9
15
11
16
10
7
5
13
8
RMOTE CONTROL UNIT<M5>
3
4
2
CABINET ASSY <M2>
SERIAL NO. STICKER
2
14
1
SERIAL NO. STICKER
12

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
************************************		
		PACKING ASSEMBLY <M1>
1	PQ33868-45	PACKING CASE,E
1	PQ33868-49	PACKING CASE,EG
2	PQ34469A	CUSHION ASSY
3	PQ41026-8	PROTECT SHEET
4	PQM30021-59-11	POLY BAG
5	PU59168-3	RF CABLE
	or PU59167-3	RF CABLE
7	UM-3DJ2P	BATTERY,X2 CELLS
8	QPGA020-02005	POLY BAG
⚠ 9	PU30425-1306	INSTRUCTIONS
10	TCN-3379	TAPE CATALOG
11	PQ45146-13	SHEET(SPAIN),E
12	BT-20114	WARRANTY CARD,EG
13	QPGA025-03505	POLY BAG
14	PQ33909	POLY BAG,EG
⚠ 15	PU30425-1307	INSTRUCTIONS,E
16	PU61342-4	INST SHEET(RCU)

4.2 CABINET ASSEMBLY <M2>



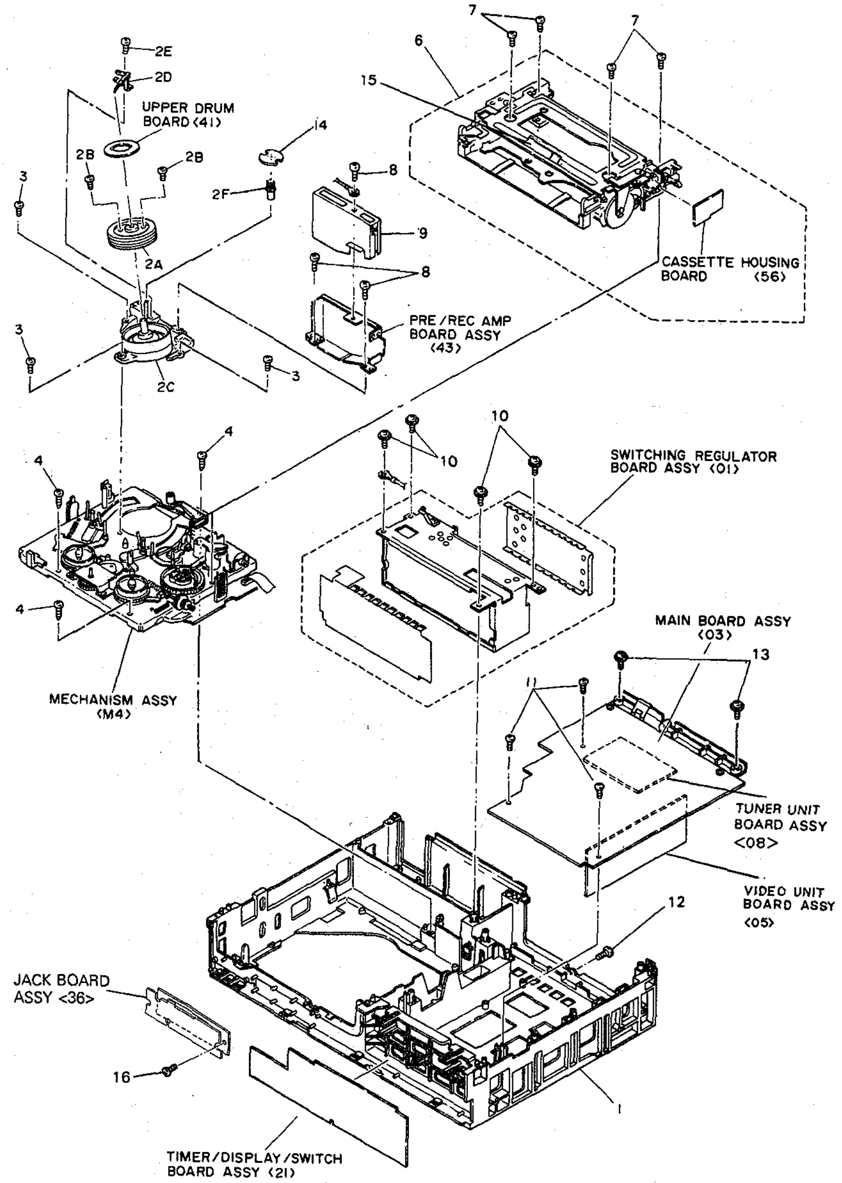
* *

CABINET ASSEMBLY <M2>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PQ11370C-6	FRONT PANEL ASSY,E
1	PQ11370F-6	FRONT PANEL ASSY,EG
1A	PQ21382-3	DOOR,E
1A	PQ21382-5	DOOR,EG
1B	PQ21383-3	CASETTE HOUSING DOOR
1C	PQ45814	TORSION SPRING
1D	PQ21381-2-6	BUTTON(1)
1E	PU60005	PUSH OPEN UNIT
1F	PU60109	CATCHER
1G	PQ21422	BUTTON(3)
1H	PQ34308-2	BUTTON(2)
3	PQ33012D	FOOT ASSY,X2
3A	PQ33013-4	FOOT(1),X2
3B	PQ33014	FOOT(2),X2
4	PQ33013-4	FOOT(1),X2
5	SDSF3010Z	SCREW,X4 FOR FOOT
⚠ 6	PQ11144-1-3	TOP COVER
7	PQ43827	SPECIAL SCREW,X4 FOR TOP COVER
⚠ 8	PQ11145	BOTTOM COVER
9	SDSF3010Z	SCREW,FOR BOTTM COVER
10	SDSF3010M	SCREW,FOR TOP COVER
11	PQ34526A-1	KNOB(JOG)ASSY
12	PQ34315-1-2	KNOB(SHUTTLE)
13	PEME0886	JOG SHUTTLE ASSY
14	SDSF3006Z	SCREW,X3 FOR JOG SHUTTLE ASSY

4.3 CHASSIS ASSEMBLY <M3>

BEWARE OF BOGUS PARTS
Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.

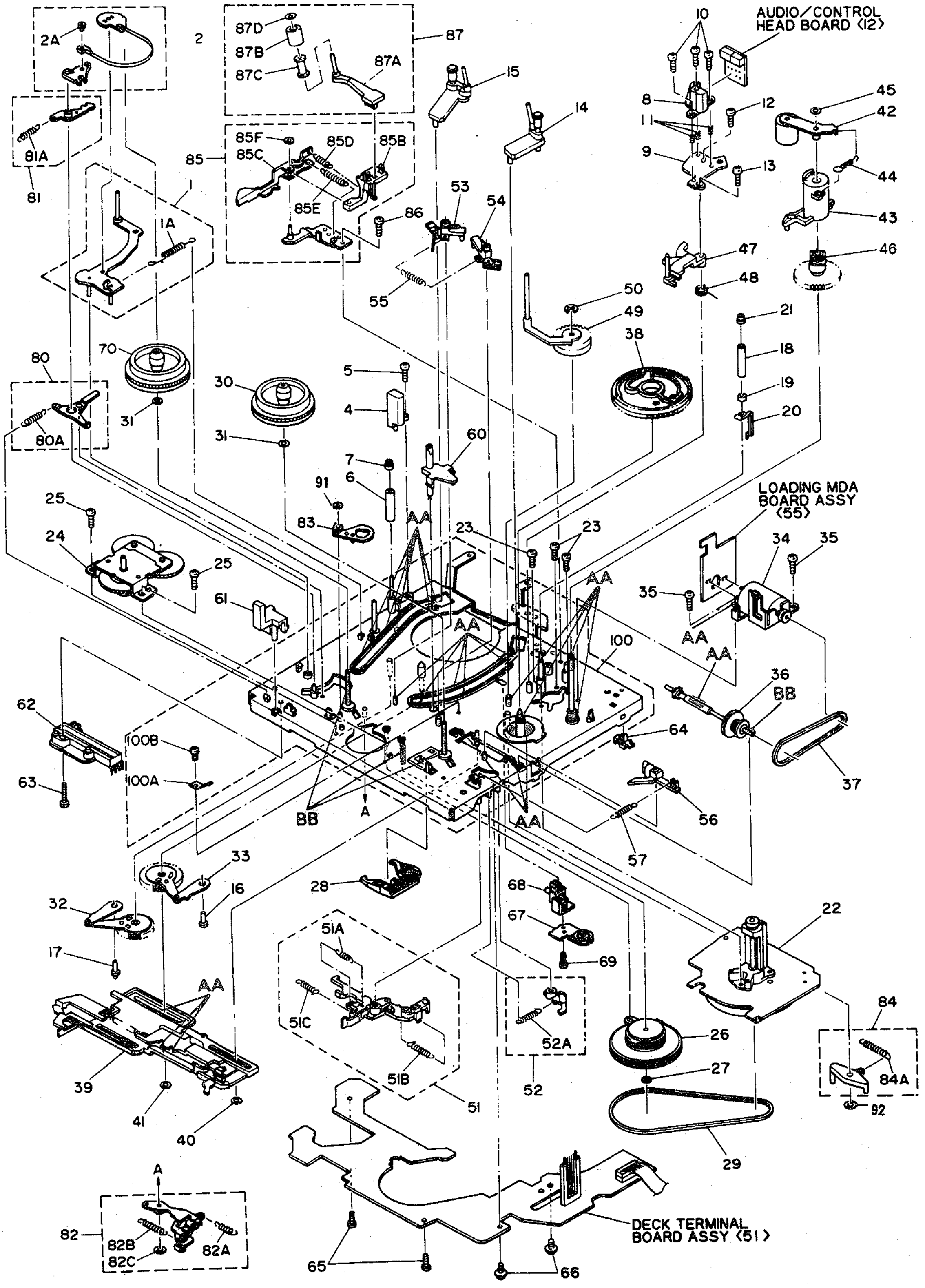

2E
2D
UPPER DRUM BOARD <41>
2B
2B
2F
14
3
2A
3
2C
3
7
7
6
15
8
9
8
PRE/REC AMP BOARD ASSY <43>
CASSETTE HOUSING BOARD <56>
4
4
4
10
10
SWITCHING REGULATOR BOARD ASSY <01>
MECHANISM ASSY <M4>
MAIN BOARD ASSY <03>
13
11
TUNER UNIT BOARD ASSY <08>
VIDEO UNIT BOARD ASSY <05>
12
JACK BOARD ASSY <36>
16
1
TIMER/DISPLAY/SWITCH BOARD ASSY <21>

****

CHASSIS ASSEMBLY <M3>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
⚠ 1	PQ11060	BOTTOM CHASSIS
2A	PDM2087A-1	UPPER DRUM ASSEMBLY
2B	PDM4165A	DRUM SCREW ASSY, X2
2C	PDM2138H	LOWER DRUM MOTOR ASSEMBLY
2D	PDM4229A-1	BRUSH ASSY
2E	SPSG2606Z	SCREW,FOR BRUSH ASSEMBLY
2F	PDM4226A	ROLLER ASSEMBLY
3	SPST2610Z	SCREW,X3 FOR DRUM
	or SDST2610Z	SCREW,X3
4	PQ43831	SPECIAL SCREW,X3 FOR MECHA
6	PUS29499D	CASSETTE HOUSING ASSY
7	SDST2608Z	SCREW,X4 FOR CASSETTE HOUSING
	or SPST2608Z	SCREW,X4
8	SDSG2606Z	SCREW,X3 FOR PRE/REC
9	PQ32217-2	SHIELD CASE(2),FOR PRE/REC
10	SDSF2610Z	SCREW,X4 FOR SW REG BOARD
11	SDSF2610Z	SCREW,X3 FOR MAIN BOARD
12	SDSF3010M	SCREW,FOR TERMINAL BOARD
13	GPSF2610Z	SCREW,X2 FOR TERMINAL BOARD
14	PQ45160	INERTIA PLATE
15	PQM30029-127	SPACER
16	SDSF2606Z	SCREW,FOR JACK BOARD

4.4 MECHANISM ASSEMBLY <M4>



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AUDIO/CONTROL HEAD BOARD <12>
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LOADING MDA BOARD ASSY <55>
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DECK TERMINAL BOARD ASSY <51>

Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

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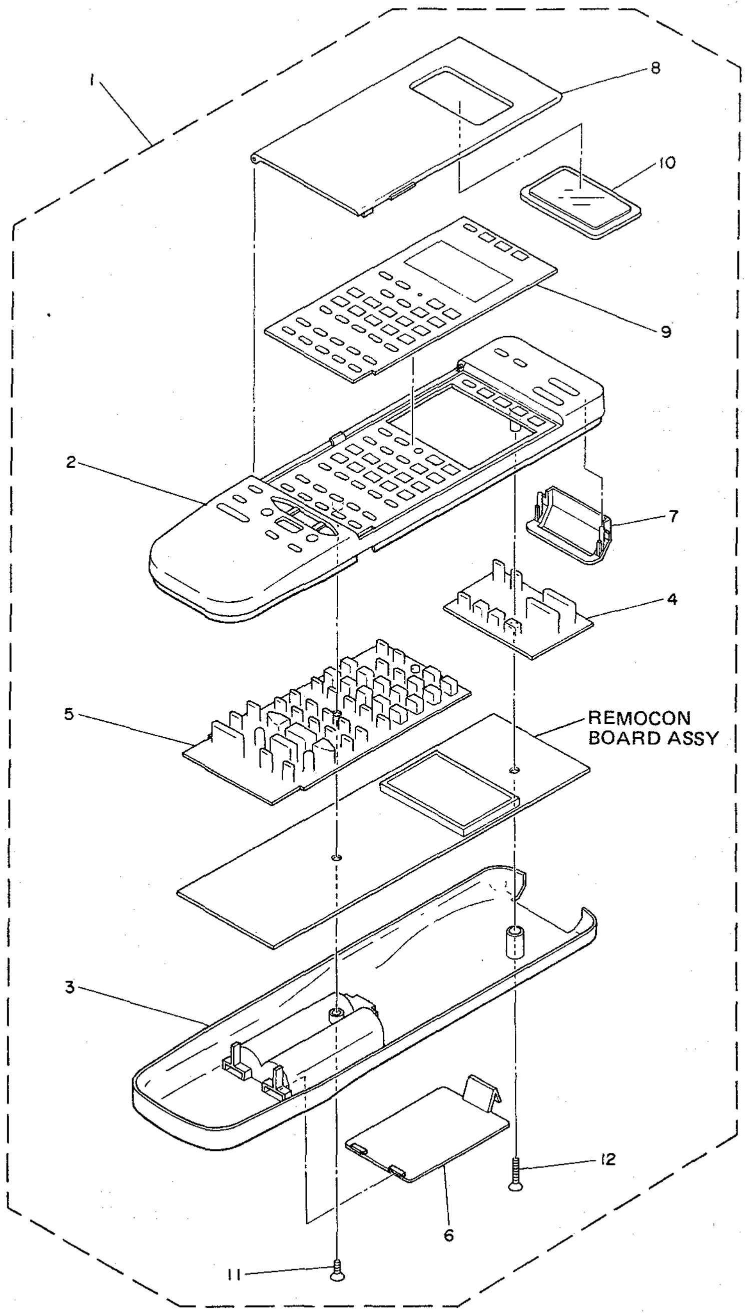
MECHANISM ASSEMBLY <M4>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
1	PQ43497E-11	TENSION ARM ASSY
1A	PQ43500	TENSION SPRING
2	PQ44734A-7	TENSION BAND ASSY
2A	PQ45456	ADJUST PIN
4	PU60616	FULL ERASE HEAD
5	SDSF2614Z	SCREW
6	PQ43505-1-1	ROLLER
7	PQ43506	GUIDE POLE CAP
8	PU61002	AUDIO/CONTROL HEAD
9	PQ43509	HEAD BASE
10	PQ43687A	SPECIAL SCREW,X3
11	PQM30002-192	COMPRESSION SPRING,X3
12	SPSF2608M	SCREW
13	SPSP2606Z	SCREW
14	PU61103-2-6	POLE BASE(TAKE-UP) ASSY
15	PU61151-2-5	POLE BASE(SUPPLY) ASSY
16	PQ43524	STOPPER
17	PQ43525	STOPPER 2
18	PQ43526-1-3	TAPE GUIDE
19	PQ43670-1-1	GUIDE FLANGE
20	PQ43675	TAPE GUARD
21	PQ43506	GUIDE POLE CAP
⚠ 22	PU61003-1-2	CAPSTAN MOTOR
23	SPSG2608Z	SCREW,X3
24	PU61246	IDLER GEAR UNIT
25	SPST2606Z	SCREW,X2
26	PU61245-1-1	CLUTCH UNIT
27	PQM30017-8	SLIT WASHER
28	PQ43532B	CHANGE LEVER ASSY
29	PU61006	TIMING BELT
30	PU60858-1-4	REEL DISK (TAKE-UP)
31	PQM30018-54	SPACER,X2
32	PQ43537A	LOADING ARM ASSY (SUPPLY)
33	PQ43542B	LOADING ARM ASSY (TAKE-UP)
⚠ 34	PQ43676B-5	MODE MOTOR ASSY
	or PQ43676C-7	MODE MOTOR ASSY
35	SPST2606Z	SCREW,X2
36	PQ43548A-3	WORM CLUTCH ASSY
37	PQM30003-23	LOADING BELT
38	PQ20822-2-7	CONTROL CAM
39	PQ44581A-6	PLATE ASSY
40	PQM30017-12	SLIT WASHER
41	PQM30017-8	SLIT WASHER
42	PQ43558A-5	PINCH ROLLER ARM ASSY
	or PQ43558B	PINCH ROLLER ARM ASSY
43	PQ32415	PINCH ROLLER PRESS LEVER
44	PQM30001-233	TENSION SPRING
45	PQM30017-12	SLIT WASHER
46	PQ32416-2	PINCH ROLLER CAM
47	PQ43567A-13	GUIDE ARM ASSY
48	PQ43569-1-3	TORSION SPRING
49	PQ43570A-2	HALF LOADING GEAR ASSY
50	PQM30017-12	SLIT WASHER
51	PQ43575A-5	CANCEL LEVER ASSY
51A	PQM30001-273	TENSION SPRING
51B	PQM30001-237	TENSION SPRING
51C	PQM30001-274	TENSION SPRING
52	PQ43578A-2	HOOK ASSY
52A	PQM30001-238	TENSION SPRING
53	PQ43581C	MAIN BRAKE(SUPPLY) ASSY
54	PQ43582B	MAIN BRAKE(TAKE-UP) ASSY
55	PQM30001-251	TENSION SPRING
56	PQ43583A	SUB BRAKE ASSY (TAKE-UP)
57	PQM30001-346	TENSION SPRING
60	PU60621-1-2	LED HOLDER,(INCL.D1)
61	PU60624-1-4	REC SAFETY SWITCH,(S2)
62	PU61247-1-1	SLIDE ENCORDER,(S3)
63	SDSF2614Z	SCREW
64	PQ32516	PWB HOLDER
65	SDST2616Z	SCREW,X2
66	GPSF2608Z	SCREW,X2
67	PQ43912A-7	PULLEY ARM ASSY
68	PQ33249	PULLEY BASE
69	PQ45121A	SCREW
70	PU60859-1-4	REEL DISK (SUPPLY)
80	PQ44739A-1	LOCK LEVER 1 ASSY
80A	PQM30001-278-46	TENSION SPRING
81	PQ44741A-3	LOCK LEVER 2 ASSY
81A	PQM30001-279-52	TENSION SPRING
82	PQ44743A-8	IDLER LEVER ASSY
82A	PQM30001-344	TENSION SPRING
82B	PQM30001-301	TENSION SPRING
82C	PQM30017-5	SLIT WASHER
83	PQ44746A-2	OFF LEVER ASSY
84	PQ44585A-8	CAPSTAN BRAKE ASSY
84A	PQM30001-282-52	SPRING
85	PQ44843A-3	ARM BASE ASSY
85B	PQ33511-1-2	CLEANER ARM
85C	PQ44841-1-4	CANCEL LEVER
85D	PQM30001-299	TENSION SPRING
85E	PQM30001-300	TENSION SPRING
85F	PQM30017-5	SLIT WASHER
86	SPST2606Z	SCREW
87	PQ44840A-3	CLEANER BASE ASSY
87A	PQ44844A	CLEANER BASE SUB ASSY
87B	PQ44837	CLEANER
87C	PQ44838	CLEANER HOLDER
87D	PQM30017-38	SLIT WASHER
91	PQM30017-5	SLIT WASHER
92	PQM30017-8	SLIT WASHER
100	PQ20994B-5	MAIN DECK ASSY
	or PQ21232B-1	MAIN DECK ASSY
100A	PQ43849	EARTH PLATE
100B	SPST2604Z	SCREW

4.5 REMOTE CONTROL UNIT <M5>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REMOTE CONTROLLER <M5>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
⚠ 1	PQ11202W	REMOTE CONTROLLER
2	PQ11203-16	COVER(FRONT)
3	PQ11093	COVER(REAR)
4	PQ33870-9	BUTTON(1)
5	PQ21253-14	BUTTON(2)
6	PQ33609	CAP(BATTERY)
7	PQ33610	WINDOW(IR)
8	PQ33871-3	DOOR
9	PQ33872-18	PLATE
10	PQ45167	WINDOW(DOOR)
11	SSSF2008M	SCREW
12	SSSF2006M	SCREW

SECTION 5
ELECTRICAL PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

SWITCH REGULATOR BOARD ASSEMBLY <01>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB20526X-01	SW REGULATOR BOARD ASSY	
	IC1	LM358N	IC	
		or LM358P	IC	
		or XRA10358	IC	
		or BA10358	IC	
	Q1	2SC4517A-LF619	TRANSISTOR	
	Q2	2SC3616(MLK)	TRANSISTOR	
	Q5	2SB1425(EU)	TRANSISTOR	
	D1	10E6-F2	DIODE	
	D2	10E6-F2	DIODE	
	D3	10E6-F2	DIODE	
	D4	10E6-F2	DIODE	
	D5	AU01	FR DIODE	
		or 1SR153-400-T2	FR DIODE	
	D6	AU01	FR DIODE	
		or 1SR153-400-T2	FR DIODE	
	D7	MTZ27BT-77	ZENER DIODE	
	D8	AU01Z	FR DIODE	
		or ERA18-02-T2	FR DIODE	
		or 1SR153-200-T2	FR DIODE	
	D14	AU01Z	FR DIODE	
		or ERA18-02-T2	FR DIODE	
		or 1SR153-200-T2	FR DIODE	
	D15	AU01Z	FR DIODE	
		or ERA18-02-T2	FR DIODE	
		or 1SR153-200-T2	FR DIODE	
	D16	FML-12S	FR DIODE	
		or 5DL2CZ41A	FR DIODE	
		or FCF06A20	FR DIODE	
		or MA644	FR DIODE	
	D17	FMB-24	BARRIER DIODE	
		or F5KQ40B	BARRIER DIODE	
		or 5GWJ2CZ42	SB DIODE	
	D18	AU01Z	FR DIODE	
		or ERA18-02-T2	FR DIODE	
		or 1SR153-200-T2	FR DIODE	
	D19	MTZ33AT-77	ZENER DIODE	
	D21	AU01Z	FR DIODE	
		or ERA18-02-T2	FR DIODE	
		or 1SR153-200-T2	FR DIODE	
	D22	MTZV6.2A	ZENER DIODE	
	D23	RD15ES-T1B1	ZENER DIODE	
	R1	YU40344-2R2	WW RESISTOR	2.2Ω
		or PERE0505-2R2	WW RESISTOR	2.2Ω
	R2	QRD161J-334	RESISTOR	330KΩ,1/6W
	R3	QRD161J-334	RESISTOR	330KΩ,1/6W
	R4	QRD161J-563	RESISTOR	56KΩ,1/6W
	R5	QRG029J-683G	OMF RESISTOR	68KΩ,2W
	R6	QRG029J-241G	OMF RESISTOR	240Ω,2W
	R7	QRD161J-122	RESISTOR	1.2KΩ,1/6W
	R8	QRD161J-561	RESISTOR	560Ω,1/6W
	R9	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
	R10	QRG029J-273A	OMF RESISTOR	27KΩ,2W
	R12	QRD161J-393	RESISTOR	39KΩ,1/6W
⚠	R16	QRG02DJ-222X	OMF RESISTOR	2.2KΩ,2W
	R17	QRD161J-471	RESISTOR	470Ω,1/6W
	R18	QRD161J-102	RESISTOR	1KΩ,1/6W
	R19	QRV144F-1071A	CMF RESISTOR	1.07KΩ,1/4W
	R20	QRV144F-1001A	CMF RESISTOR	1KΩ,1/4W
⚠	R21	QRZ0077-470X	FUSIBLE RESISTOR	47Ω,1/4W
	R22	QRD161J-102	RESISTOR	1KΩ,1/6W
	R23	QRD161J-471	RESISTOR	470Ω,1/6W
	R24	QRV144F-4423AY	CMF RESISTOR	442KΩ,1/4W
	R25	QRV144F-1002A	CMF RESISTOR	10.0KΩ,1/4W
	R26	QRV144F-1182A	CMF RESISTOR	11.8KΩ,1/4W
⚠	R27	QRZ0052-130	FUSIBLE RESISTOR	13Ω
	R28	QRD161J-331	RESISTOR	330Ω,1/6W
	R29	QRD161J-103	RESISTOR	10KΩ,1/6W
⚠	C1	QFZ9037-333	M CAPACITOR	0.033μF
⚠	C2	QFZ9037-333	M CAPACITOR	0.033μF
⚠	C3	QFZ9037-333	M CAPACITOR	0.033μF
⚠	C6	QCZ9016-222M	CAPACITOR	0.0022μF
⚠		or QCZ9048-222	CAPACITOR	0.0022μF
⚠	C7	QCZ9016-222M	CAPACITOR	0.0022μF
⚠		or QCZ9048-222	CAPACITOR	0.0022μF
⚠	C8	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	C9	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	C10	QCZ9016-222M	CAPACITOR	0.0022μF
⚠	C11	QCZ9016-222M	CAPACITOR	0.0022μF
	C12	PECA0738-826	E CAPACITOR	82μF
		or PECA0793-826	E CAPACITOR	82μF
	C13	QCZ0212-472	CAPACITOR	0.0047μF,1KV
	C14	QCZ0213-101Z	CAPACITOR	100pF,1KV
	C15	QFV11HJ-224	TF CAPACITOR	0.22μF,50V
		or PECA0780-224Z	M CAPACITOR	0.22μF,50V
	C16	QFL41HJ-682	M CAPACITOR	0.0068μF,50V
		or QFLA1HJ-682Z	M CAPACITOR	0.0068μF,50V
	C17	QETC1HM-475	E CAPACITOR	4.7μF,50V
	C18	QETC1JM-336	E CAPACITOR	33μF,63V
	C19	QEZ0125-277	E CAPACITOR	270μF
		or QEZ0138-277	E CAPACITOR	270μF

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C20	QETC1EM-227	E CAPACITOR	220μF,25V
	C21	QEGB1CM-687	E CAPACITOR	680μF,16V
	C22	QETB1CM-108	E CAPACITOR	1000μF,16V
	C23	QFL41HJ-102	M CAPACITOR	0.001μF,50V
		or QFLA1HJ-102Z	M CAPACITOR	0.001μF,50V
	C24	QEGB1AM-687	E CAPACITOR	680μF,10V
	C25	QETC1HM-476	E CAPACITOR	47μF,50V
	C26	QETC1VM-336	E CAPACITOR	33μF,35V
	C27	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
	C28	QEGC1AM-476	E CAPACITOR	47μF,10V
	C29	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C30	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
	C31	QETB1AM-108	E CAPACITOR	1000μF,10V
	C34	QETC1CM-107	E CAPACITOR	100μF,16V
	C35	QFV11HJ-333	MMT CAPACITOR	0.033μF,50V
		or QFV41HJ-333	TF CAPACITOR	0.033μF,50V
	L1	PELN0270-330KZ	COIL	33μH
		or PELN0628-330KZ	COIL	33μH
		or PELN0640-330KZ	COIL	33μH
	L2	PELN0270-330KZ	COIL	33μH
		or PELN0628-330KZ	COIL	33μH
		or PELN0640-330KZ	COIL	33μH
	L3	PELN0270-330KZ	COIL	33μH
		or PELN0628-330KZ	COIL	33μH
		or PELN0640-330KZ	COIL	33μH
⚠	PHS1	PC111LS	PHOTO COUPLER	
⚠		or PC111S	PHOTO COUPLER	
⚠	POC1	QMP3980-200	POWER CORD	
⚠	T1	PELN0480	SW TRANS	
⚠	BKT1	PQ33738	BRACKET(SW REG)	
	ETH1	PQ43872	EARTH PLATE,X2	
⚠	HD1	QHS3771-108	STRAIN RELIEF	
⚠	HD2	PU57505	FUSE CLIP,X2	
⚠	HS1	PQ45175	HEAT SINK	
⚠	LF1	PU59707	LINE FILTER	
⚠		or PELN0255	LINE FILTER	
⚠	LF2	PU61108	LINE FILTER	
⚠		or PU60347	LINE FILTER	
	SCW1	SDST2605Z	SCREW,X2	
	SCW2	YQM30032-22	SCREW	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	SCW3	SDSG3008Z	SCREW	
	SCW4	SDSG3006Z	SCREW	
	SLD1	PQ21202-1-3	SHIELD CASE(1)	
	SLD2	PQ33739	SHIELD CASE(2)	
	SLD3	PQ33740	SHIELD CASE(3)	
	SLD4	PQ33741	SHIELD CASE(4)	
⚠	TAB1	A74316	TAB,X2	
	TP1	PU56347	TEST POINT,X2(TP1,2)	
	CN1	PU60910-104	WIRE TRAP	
	CN2	PU60910-108	CONNECTOR	
⚠	CP1	ICP-N20	CIRCUIT PROTECTOR	
⚠	CP2	ICP-N20	CIRCUIT PROTECTOR	
⚠	F1	QMF51E2-1R0	FUSE	T1.0A
⚠		or QMF51E2-1R0J1	FUSE	T1.0A

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MAIN BOARD ASSEMBLY <03>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	PWBA	PB10636C	MAIN BOARD ASSY,E
	PWBA	PB10636E	MAIN BOARD ASSY,EG
⚠	TB1	PQ21199-11	TERMINAL BOARD,EG
⚠	TB1	PQ21199-8	TERMINAL BOARD,E
⚠	RF1	PERF0091	RF CONVERTER
	CL2	PU59311-2	MINI CLAMP
	ETH1	PQ43012-1-1	EARTH PLATE
	HD1	PEME0888	WIRE HOLDER
	HD2	PEME0831	HOLDER,X2
	HD3	PEME0841	HOLDER,X2
	SCW1	SDST2605Z	SCREW
	SCW2	SDSF2608Z	SCREW,X2

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	SPC1	PU60010	SPACER	
	WR1	ML-PU3954A	COAXIAL CORD,RF CONV-TNR	
	TP31	PEMC0726-030C	TEST PIN,X16	
		or PEMC0727	TEST PIN,X16	

– AUDIO SECTION –

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
⚠	IC1	BA7765AS	IC	
⚠		or XRA7765AS	IC	
	Q1	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)	TRANSISTOR	
	Q2	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)	TRANSISTOR	
	Q3	DTA114ES	TRANSISTOR	
	Q4	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)	TRANSISTOR	
	Q5	DTA124ES	TRANSISTOR	
	Q6	DTA144ES	TRANSISTOR	
	D2	1SS133	DIODE	
		or MA165	DIODE	
	D3	RD5.1ES-T1B2	ZENER DIODE	
		or UZ5.1BSB	ZENER DIODE	
		or HZS5.1EB2	ZENER DIODE	
	R1	QRD161J-562	RESISTOR	5.6KΩ,1/6W
	R2	QRD161J-562	RESISTOR	5.6KΩ,1/6W
	R3	QRD161J-473	RESISTOR	47KΩ,1/6W
	R4	QRD161J-242	RESISTOR	2.4KΩ,1/6W
	R5	QRD161J-103	RESISTOR	10KΩ,1/6W
	R6	QRD161J-242	RESISTOR	2.4KΩ,1/6W
	R7	QRD161J-102	RESISTOR	1KΩ,1/6W
	R8	QRD161J-471	RESISTOR	470Ω,1/6W
	R9	QRD161J-471	RESISTOR	470Ω,1/6W
	R10	QRD161J-100	RESISTOR	10Ω,1/6W
	R12	QRD161J-153	RESISTOR	15KΩ,1/6W
	R13	QRD161J-6R8	RESISTOR	6.8Ω,1/6W
	R15	QRD161J-223	RESISTOR	22KΩ,1/6W
	R16	QRD161J-181	RESISTOR	180Ω,1/6W
	R17	QRD161J-274	RESISTOR	270KΩ,1/6W
	R18	QRD161J-103	RESISTOR	10KΩ,1/6W
	R21	QRD161J-183	RESISTOR	18KΩ,1/6W
	R22	QRD161J-682	RESISTOR	6.8KΩ,1/6W
	R23	QRD161J-752	RESISTOR	7.5KΩ,1/6W
	R24	QRD161J-153	RESISTOR	15KΩ,1/6W
	R25	QRD161J-153	RESISTOR	15KΩ,1/6W
	R26	QRD161J-475	RESISTOR	4.7MΩ,1/6W
	R27	QRD161J-475	RESISTOR	4.7MΩ,1/6W
	R28	QRD161J-123	RESISTOR	12KΩ,1/6W
	R29	QRD161J-333	RESISTOR	33KΩ,1/6W
	R30	QRD161J-103	RESISTOR	10KΩ,1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R32	QRD161J-333	RESISTOR	33KΩ,1/6W
	R34	QRD161J-151	RESISTOR	150Ω,1/6W
	R36	QRD161J-332	RESISTOR	3.3KΩ,1/6W
	R37	QRD161J-273	RESISTOR	27KΩ,1/6W
	R41	QRD161J-475	RESISTOR	4.7MΩ,1/6W
	R45	QRD161J-222	RESISTOR	2.2KΩ,1/6W
	R46	QRD161J-472	RESISTOR	4.7KΩ,1/6W
⚠	R47	QRZ0052-4R7	FUSIBLE RESISTOR	4.7Ω
	R49	QRD161J-473	RESISTOR	47KΩ,1/6W
	R50	QRD161J-103	RESISTOR	10KΩ,1/6W
	R51	QRD161J-822	RESISTOR	8.2KΩ,1/6W
	R52	QRD161J-333	RESISTOR	33KΩ,1/6W
	R53	QRD161J-822	RESISTOR	8.2KΩ,1/6W
	C1	QCBB1HJ-561	CAPACITOR	560pF,50V
	C2	QCBB1HJ-561	CAPACITOR	560pF,50V
	C3	QCC11EJ-272	CAPACITOR	0.0027μF,25V
	C4	QCC11EJ-392	CAPACITOR	0.0039μF,25V
	C5	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C6	QFLC1HJ-122Z	M CAPACITOR	0.0012μF,50V
	C8	PU60550-105	E CAPACITOR	1μF,50V
	C9	QETC1CM-106	E CAPACITOR	10μF,16V
	C10	QFV71HJ-103	TF CAPACITOR	0.01μF,50V
	C11	QEK61HM-105	E CAPACITOR	1μF,50V
	C12	QETC1CM-106	E CAPACITOR	10μF,16V
	C13	QCC11CJ-104	CAPACITOR	0.1μF,16V
	C14	QETC1CM-336	E CAPACITOR	33μF,16V
	C15	QETC1HM-104	E CAPACITOR	0.1μF,50V
	C16	QETC1HM-105	E CAPACITOR	1μF,50V
	C17	QFV71HJ-153	TF CAPACITOR	0.015μF,50V
	C19	QETC1CM-106	E CAPACITOR	10μF,16V
	C20	QCC11EJ-183	CAPACITOR	0.018μF,25V
	C21	QCC11EJ-272	CAPACITOR	0.0027μF,25V
	C24	QCC11EJ-222	CAPACITOR	0.0022μF,25V
	C25	QETC1CM-106	E CAPACITOR	10μF,16V
	C26	QCBB1HJ-331	CAPACITOR	330pF,50V
	C27	QFV71HJ-473	TF CAPACITOR	0.047μF,50V
	C28	QCXB1CM-122	CAPACITOR	0.0012μF,16V
	C29	QCBB1HJ-221	CAPACITOR	220pF,50V
	C31	QCXB1CM-122	CAPACITOR	0.0012μF,16V
	C33	QCBB1HJ-101	CAPACITOR	100pF,50V
	C34	QCBB1HJ-101	CAPACITOR	100pF,50V
	L1	PU58308-103J	COIL	10mH
	L2	PU59152-3R3J	COIL	3.3μH
	L3	PU59152-3R3J	COIL	3.3μH
	L4	PU59152-2R2J	COIL	2.2μH
	L5	PU48530-471K	COIL	470μH
	L7	PU59152-3R3J	COIL	3.3μH
	L9	PU59152-R33J	COIL	0.33μH
	L10	PU59152-1R0J	COIL	1μH
⚠	T1	PELN0533	OSC TRANSFORMER	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	CN1	PU59555-4	CONNECTOR
	CN2	PU58844-2	CONNECTOR
	CN3	PU59555-4	CONNECTOR

– VIDEO SECTION –

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	IC280	BA7106LS	IC
		or XRA7106LS	IC
	Q201	2SC1740S(RS)	TRANSISTOR
		or 2SC3199(GB)-TJK	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
	Q202	2SC1740S(RS)	TRANSISTOR
		or 2SC3199(GB)-TJK	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
	Q206	2SC1740S(RS)	TRANSISTOR
		or 2SC3199(GB)-TJK	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
	Q207	2SC1740S(RS)	TRANSISTOR
		or 2SC3199(GB)-TJK	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
	Q210	2SA933S(RS)	TRANSISTOR
		or 2SA1267(YG)-TJK	TRANSISTOR
	Q211	2SA933S(RS)	TRANSISTOR
		or 2SA1267(YG)-TJK	TRANSISTOR
	Q213	2SC1740S(RS)	TRANSISTOR
		or 2SC3199(GB)-TJK	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
	Q214	2SA933S(RS)	TRANSISTOR
		or 2SA1267(YG)-TJK	TRANSISTOR
	Q218	2SC1740S(RS)	TRANSISTOR
		or 2SC3199(GB)-TJK	TRANSISTOR
		or 2SC3311A(RS)	TRANSISTOR
		or 2SC536SPA(FG)	TRANSISTOR
	Q222	DTC124ES	TRANSISTOR
	D203	1SS133	DIODE
		or MA165	DIODE
	D213	1SS133	DIODE
		or MA165	DIODE
	D214	1SS133	DIODE
		or MA165	DIODE
	D215	1SS133	DIODE
		or MA165	DIODE
	D280	1SS133	DIODE
		or MA165	DIODE
	D281	1SS133	DIODE
		or MA165	DIODE

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R201	QRD161J-102	RESISTOR	1KΩ,1/6W
	R202	QRD161J-223	RESISTOR	22KΩ,1/6W
	R203	QRD161J-223	RESISTOR	22KΩ,1/6W
	R206	QRD161J-101	RESISTOR	100Ω,1/6W
	R208	QRD161J-681	RESISTOR	680Ω,1/6W
	R209	QRD161J-152	RESISTOR	1.5KΩ,1/6W
	R210	QRD161J-621	RESISTOR	620Ω,1/6W
	R211	QRD161J-333	RESISTOR	33KΩ,1/6W
	R212	QRD161J-153	RESISTOR	15KΩ,1/6W
	R213	QRD161J-222	RESISTOR	2.2KΩ,1/6W
	R214	QRD161J-681	RESISTOR	680Ω,1/6W
	R215	QVZ3518-681AZ	V RESISTOR,SP REC COLOR LEVEL	680Ω
	R216	QRD161J-103	RESISTOR	10KΩ,1/6W
	R217	QRD161J-103	RESISTOR	10KΩ,1/6W
	R218	QRD161J-102	RESISTOR	1KΩ,1/6W
	R227	QRD121J-391S	RESISTOR	390Ω,1/2W
	R229	QRD161J-123	RESISTOR	12KΩ,1/6W
	R230	QRD161J-103	RESISTOR	10KΩ,1/6W
	R240	QRD161J-102	RESISTOR	1KΩ,1/6W
	R242	QRD161J-102	RESISTOR	1KΩ,1/6W
	R243	QRD161J-102	RESISTOR	1KΩ,1/6W
	R244	QRD161J-152	RESISTOR	1.5KΩ,1/6W
	R245	QRD161J-102	RESISTOR	1KΩ,1/6W
	R247	QRD161J-222	RESISTOR	2.2KΩ,1/6W
	R248	QRD161J-222	RESISTOR	2.2KΩ,1/6W
	R249	QRD161J-681	RESISTOR	680Ω,1/6W
	R250	QRD161J-750	RESISTOR	75Ω,1/6W
	R251	QRD161J-750	RESISTOR	75Ω,1/6W
	R256	QRD161J-242	RESISTOR	2.4KΩ,1/6W
	R257	QRD161J-222	RESISTOR	2.2KΩ,1/6W
	R258	QRD161J-222	RESISTOR	2.2KΩ,1/6W
	R263	QRD161J-681	RESISTOR	680Ω,1/6W
	R264	QRD161J-331	RESISTOR	330Ω,1/6W
	R267	QRD161J-562	RESISTOR	5.6KΩ,1/6W
	R280	QRD161J-914	RESISTOR	910KΩ,1/6W
	R281	QRD161J-681	RESISTOR	680Ω,1/6W
	R282	QRD161J-391	RESISTOR	390Ω,1/6W
	R283	QRD161J-104	RESISTOR	100KΩ,1/6W
	R284	QRD161J-273	RESISTOR	27KΩ,1/6W
	R285	QRD161J-103	RESISTOR	10KΩ,1/6W
	R286	QRD161J-333	RESISTOR	33KΩ,1/6W
	C201	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C202	QCSB1HJ-390	CAPACITOR	39pF,50V
	C203	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C204	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C205	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C206	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C207	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C208	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C209	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C212	QETC1CM-476	E CAPACITOR	47μF,16V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C213	QCVB1CN-103	CAPACITOR	0.01μF,16V
C214	QEK61AM-476	E CAPACITOR	47μF,10V
C215	QETC0JM-108	E CAPACITOR	1000μF,6.3V
C216	QETC0JM-476	E CAPACITOR	47μF,6.3V
C217	QCVB1CN-103	CAPACITOR	0.01μF,16V
C224	QETC1CM-476	E CAPACITOR	47μF,16V
C225	QCVB1CN-103	CAPACITOR	0.01μF,16V
C226	QCSB1HK-4R7	CAPACITOR	4.7pF,50V
C229	QCSB1HJ-560	CAPACITOR	56pF,50V
C235	QFV11HJ-103	MM CAPACITOR	0.01μF,50V
C280	QETC1CM-106	E CAPACITOR	10μF,16V
C281	QETC1HM-335	E CAPACITOR	3.3μF,50V
C282	QCBB1HJ-471	CAPACITOR	470pF,50V
C284	QCVB1CN-103	CAPACITOR	0.01μF,16V
C285	QCVB1CN-103	CAPACITOR	0.01μF,16V
C286	QCVB1CN-103	CAPACITOR	0.01μF,16V
C287	QCVB1CN-103	CAPACITOR	0.01μF,16V
C288	QFN31HJ-471	M CAPACITOR	470pF,50V
C289	QCSB1HJ-270	CAPACITOR	27pF,50V
C290	QCXB1CN-472	CAPACITOR	0.0047μF,16V
C291	QCSB1HK-4R7	CAPACITOR	4.7pF,50V
C293	QETC0JM-477	E CAPACITOR	470μF,6.3V
C294	QCVB1CN-103	CAPACITOR	0.01μF,16V
C295	QCT25CH-101	CAPACITOR	100pF,50V
L201	PU48530-101K	COIL	100μH
L202	PU59152-180J	COIL	18μH
L203	PU48530-101K	COIL	100μH
L204	PU48530-101K	COIL	100μH
L205	PU48530-101K	COIL	100μH
L206	PU59152-121J	COIL	120μH
L280	PU48530-101K	COIL	100μH
L282	PU60655-2	COIL, SECAM DET	
EQ201	PU54838	EQUALIZER	
	or PU60714	EQUALIZER	
CN201	PU58844-6	CONNECTOR	
CN202	PU59555-7	CONNECTOR	
CN203	PU59555-4R	CONNECTOR	

– SERVO SECTION –

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
IC401	HD49733ANT	IC	
IC501	BA7039	IC	
	or XRA7039	IC	
Q402	2SA1309(QRS)	TRANSISTOR	
	or 2SA933S(QRS)	TRANSISTOR	
	or 2SA1267(YG)-TJK	TRANSISTOR	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
D401	1SS133	DIODE	
	or MA165	DIODE	
D402	1SS133	DIODE	
	or MA165	DIODE	
D403	1SS133	DIODE	
	or MA165	DIODE	
D404	1SS133	DIODE	
	or MA165	DIODE	
D407	1SS133	DIODE	
	or MA165	DIODE	
D408	1SS133	DIODE	
	or MA165	DIODE	
R401	QRD161J-223	RESISTOR	22KΩ,1/6W
R402	QRD161J-225	RESISTOR	2.2MΩ,1/6W
R403	QRD161J-473	RESISTOR	47KΩ,1/6W
R404	QRD161J-222	RESISTOR	2.2KΩ,1/6W
R405	QRD161J-123	RESISTOR	12KΩ,1/6W
R406	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R407	QRD161J-392	RESISTOR	3.9KΩ,1/6W
R408	QRD161J-105	RESISTOR	1MΩ,1/6W
R409	QRD161J-273	RESISTOR	27KΩ,1/6W
R411	QRD161J-105	RESISTOR	1MΩ,1/6W
R412	QRD161J-273	RESISTOR	27KΩ,1/6W
R413	QRD161J-273	RESISTOR	27KΩ,1/6W
R414	QRD161J-335	RESISTOR	3.3MΩ,1/6W
R415	QRD161J-334	RESISTOR	330KΩ,1/6W
R416	QRD161J-822	RESISTOR	8.2KΩ,1/6W
R418	QRD161J-102	RESISTOR	1KΩ,1/6W
R419	QRD161J-473	RESISTOR	47KΩ,1/6W
R420	QVZ3518-684AZ	V RESISTOR,SP PB SW POINT	680KΩ
R422	QRD161J-104	RESISTOR	100KΩ,1/6W
R426	QRD161J-821	RESISTOR	820Ω,1/6W
R427	QRD161J-102	RESISTOR	1KΩ,1/6W
R428	QRD161J-105	RESISTOR	1MΩ,1/6W
R429	QRD161J-102	RESISTOR	1KΩ,1/6W
R430	QRD161J-102	RESISTOR	1KΩ,1/6W
R434	QRD161J-102	RESISTOR	1KΩ,1/6W
R435	QRD161J-102	RESISTOR	1KΩ,1/6W
R436	QRD161J-274	RESISTOR	270KΩ,1/6W
R437	QRD161J-274	RESISTOR	270KΩ,1/6W
R439	QRD161J-103	RESISTOR	10KΩ,1/6W
R440	QRD161J-474	RESISTOR	470KΩ,1/6W
R441	QRD161J-823	RESISTOR	82KΩ,1/6W
R442	QRD161J-275	RESISTOR	2.7MΩ,1/6W
R443	QRD161J-274	RESISTOR	270KΩ,1/6W
R450	QRD161J-564	RESISTOR	560KΩ,1/6W
R501	QRD161J-102	RESISTOR	1KΩ,1/6W
R502	QRD161J-332	RESISTOR	3.3KΩ,1/6W
R503	QRD161J-272	RESISTOR	2.7KΩ,1/6W
R508	QRD161J-124	RESISTOR	120KΩ,1/6W
C401	QCVB1CM-103	CAPACITOR	0.01μF,16V
C402	QEK61AM-226	E CAPACITOR	22μF,10V
C403	QFV11HJ-224	TF CAPACITOR	0.22μF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C404	QFLC1HJ-223Z	M CAPACITOR	0.022μF,50V
	or QFN31HJ-223	M CAPACITOR	0.022μF,50V
C405	QEK61EM-475	E CAPACITOR	4.7μF,25V
C406	QEK61EM-475	E CAPACITOR	4.7μF,25V
C407	QEK61CM-106	E CAPACITOR	10μF,16V
C408	QEK61CM-106	E CAPACITOR	10μF,16V
C409	QCC31CK-223	CAPACITOR	0.022μF,16V
C410	QFV71HJ-184	TF CAPACITOR	0.18μF,50V
	or QFV11HJ-184	MMT CAPACITOR	0.18μF,50V
C411	QCBB1HJ-471	CAPACITOR	470pF,50V
C412	QFLC1HJ-682Z	M CAPACITOR	0.0068μF,50V
	or QFN31HJ-682	M CAPACITOR	0.0068μF,50V
C414	QCBB1HJ-102	CAPACITOR	0.001μF,50V
C415	QEK61AM-226	E CAPACITOR	22μF,10V
C416	QEK61AM-226	E CAPACITOR	22μF,10V
C417	QCBB1HJ-271	CAPACITOR	270pF,50V
C418	QCBB1HJ-561	CAPACITOR	560pF,50V
C419	QCBB1HJ-102	CAPACITOR	0.001μF,50V
C420	QEK61HM-105	E CAPACITOR	1μF,50V
C421	QCBB1HJ-102	CAPACITOR	0.001μF,50V
C422	QFV71HJ-563	TF CAPACITOR	0.056μF,50V
	or QFV11HJ-563	MMT CAPACITOR	0.056μF,50V
C423	QCBB1HJ-102	CAPACITOR	0.001μF,50V
C427	QCBB1HJ-181	CAPACITOR	180pF,50V
C502	QCVB1CM-103	CAPACITOR	0.01μF,16V
C504	QFV71HJ-104	TF CAPACITOR	0.1μF,50V
	or QFV11HJ-104	MM CAPACITOR	0.1μF,50V
C505	QCVB1CM-103	CAPACITOR	0.01μF,16V
C506	QFV71HJ-683	TF CAPACITOR	0.068μF,50V
	or QFV11HJ-683	MMT CAPACITOR	0.068μF,50V
C507	QCVB1CM-103	CAPACITOR	0.01μF,16V
C508	QEK61AM-226	E CAPACITOR	22μF,10V
C509	QCVB1CM-103	CAPACITOR	0.01μF,16V
L501	PU59152-270J	COIL	27μH
CN401	PU59555-4	CONNECTOR	
CN402	PU59555-3	CONNECTOR	
⚠ CP401	ICP-F15	CIRCUIT PROTECTOR	

- MECHACON SECTION -

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
IC601	M37524M4-270SP	IC	
IC602	S-6731A-021	IC	
	or CAT35C104P-007	IC	
	or CAT35C104P-021	IC	
Q601	2SB1425(EU)	TRANSISTOR	
Q602	DTC114ES	TRANSISTOR	
Q606	DTC114YS	TRANSISTOR	
D601	MA165	DIODE	
	or 1SS133	DIODE	
D602	HZS8.2EB2TJ	ZENER DIODE	
	or MTZ8.2BT-77	ZENER DIODE	
	or UZ8.2BSB	ZENER DIODE	
D603	MA165	DIODE	
	or 1SS133	DIODE	
D604	MA165	DIODE	
	or 1SS133	DIODE	
D605	MA165	DIODE	
	or 1SS133	DIODE	
D606	11ES2	DIODE	
	or ERA15-02	DIODE	
	or S5688G	DIODE	
	or 1SR139-200	DIODE	
D608	11ES2	DIODE	
	or ERA15-02	DIODE	
	or S5688G	DIODE	
	or 1SR139-200	DIODE	
R601	QRD161J-681	RESISTOR	680Ω,1/6W
R602	QRD161J-105	RESISTOR	1MΩ,1/6W
R603	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R604	QRD161J-103	RESISTOR	10KΩ,1/6W
R605	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R606	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R607	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R608	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R609	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R610	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R611	QRD161J-102	RESISTOR	1KΩ,1/6W
R612	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R613	QRD161J-332	RESISTOR	3.3KΩ,1/6W
R614	QRD161J-332	RESISTOR	3.3KΩ,1/6W
R616	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R617	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R618	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R619	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R620	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R621	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R622	QRD161J-102	RESISTOR	1KΩ,1/6W
R623	QRD161J-102	RESISTOR	1KΩ,1/6W
R624	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R625	QRD161J-102	RESISTOR	1KΩ,1/6W
R626	QRD161J-102	RESISTOR	1KΩ,1/6W
R629	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R630	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R632	QRD161J-103	RESISTOR	10KΩ,1/6W
R633	QRD161J-471	RESISTOR	470Ω,1/6W
R634	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R636	QRD161J-821	RESISTOR	820Ω,1/6W
R638	QRD161J-152	RESISTOR	1.5KΩ,1/6W
R639	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R640	QRD161J-303	RESISTOR	30KΩ,1/6W
R641	QRD161J-224	RESISTOR	220KΩ,1/6W
R642	QRD161J-563	RESISTOR	56KΩ,1/6W
R643	QRD161J-154	RESISTOR	150KΩ,1/6W
R644	QRD161J-333	RESISTOR	33KΩ,1/6W
R645	QRD161J-103	RESISTOR	10KΩ,1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	R647	QRD161J-103	RESISTOR	10KΩ,1/6W
	R649	QRD161J-103	RESISTOR	10KΩ,1/6W
	R650	QRD161J-103	RESISTOR	10KΩ,1/6W
	R651	QRD161J-103	RESISTOR	10KΩ,1/6W
	R652	QRD161J-103	RESISTOR	10KΩ,1/6W
	R653	QRD161J-333	RESISTOR	33KΩ,1/6W
	R654	QRD161J-561	RESISTOR	560Ω,1/6W
	R660	QRD161J-473	RESISTOR	47KΩ,1/6W
	C601	QCFB1EZ-223	CAPACITOR	0.022μF,25V
	C602	QEK61EM-335	E CAPACITOR	3.3μF,25V
	C603	QER61HM-105	E CAPACITOR	1μF,50V
	C604	QEK60JM-107	E CAPACITOR	100μF,6.3V
	C605	QCBB1HJ-121	CAPACITOR	120pF,50V
	C606	QCC11EK-473	CAPACITOR	0.047μF,25V
	C609	QCSB1HJ-150	CAPACITOR	15pF,50V
	L601	PU59152-2R2J	COIL	2.2μH
⚠	CF601	PEVB0340	RESONATOR	
⚠	TH801	PESC1041	POSI THERMISTOR	
⚠		or PESC1089	POSI THERMISTOR	
	WR601	PW30602-17726	PARALLEL ASSY	
	CN601	PEMC0722-017	WIRE TRAP	
		or PEMC0753-017	WIRE TRAP	
	CN602	PU59555-4	CONNECTOR	
	CN603	PU60910-10	WIRE TRAP	
	CN604	PU59555-2	CONNECTOR	
	CN701	PEMC0823-009	CONNECTOR(BOARD TO BOARD)	
	CN703	PEMC0823-009	CONNECTOR(BOARD TO BOARD)	
⚠	CP602	ICP-F20	CIRCUIT PROTECTOR	

– REGULATOR SECTION –

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC801	UPC2405HF	IC	
		or LM2940CT-5.0	IC	
	Q801	2SB1425(EU)	TRANSISTOR	
⚠	Q802	2SC1740S	TRANSISTOR	
	Q803	2SB941P	TRANSISTOR	
		or 2SA1488	TRANSISTOR	
	Q804	2SC1740S(Q)	TRANSISTOR	
	Q805	2SC1740S	TRANSISTOR	
	Q806	2SA933S	TRANSISTOR	
		or 2SA1267(YG)-TJK	TRANSISTOR	
	D801	1SS133	DIODE	
		or MA165	DIODE	
	D802	UZ5.1BSC	ZENER DIODE	
		or MTZV5.1C	ZENER DIODE	
		or RD5.1ES-T1B3	ZENER DIODE	
	R801	QRD161J-103	RESISTOR	10KΩ,1/6W
	R802	QRD161J-222	RESISTOR	2.2KΩ,1/6W
	R803	QRD161J-102	RESISTOR	1KΩ,1/6W
	R804	QRD161J-102	RESISTOR	1KΩ,1/6W
	R805	QRD161J-102	RESISTOR	1KΩ,1/6W
	R806	QRD161J-103	RESISTOR	10KΩ,1/6W
	R807	QRD161J-221	RESISTOR	220Ω,1/6W
	R808	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R809	QRD161J-822	RESISTOR	8.2KΩ,1/6W
	R810	QRD161J-471	RESISTOR	470Ω,1/6W
	R811	QVZ3518-471A	V RESISTOR,SWD 5V	470Ω
		or QVZ3523-471A	V RESISTOR	470Ω
	R812	QRD161J-103	RESISTOR	10KΩ,1/6W
	C803	QETC1CM-107	E CAPACITOR	100μF,16V
	C804	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C805	QETC1AM-107	E CAPACITOR	100μF,10V
	C806	QFLA1HJ-103Z	M CAPACITOR	0.01μF,50V
	C807	QETC1CM-476	E CAPACITOR	47μF,16V
	C808	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C809	QFN31HJ-102	M CAPACITOR	0.001μF,50V
	C811	QETA0JM-477	E CAPACITOR	470μF,6.3V
	L801	PU53618-100J	COIL	10μH
		or PU49993-100	COIL	10μH
	CN801	PU61044-8	WIRE TRAP	
		or PEMC0848-008	WIRE TRAP	

– VPS SECTION <EG ONLY> –

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC101	SAA4700	IC	
	R101	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R102	QRD161J-822	RESISTOR	8.2KΩ,1/6W
	R103	QRD161J-753	RESISTOR	75KΩ,1/6W
	C101	QCBB1HJ-102	CAPACITOR	0.001μF,50V
	C102	QCXB1CN-472	CAPACITOR	0.0047μF,16V
	C103	QFJ41HJ-104	M CAPACITOR	0.1μF,50V
	C104	QCBB1HJ-471	CAPACITOR	470pF,50V
	C105	QFJ41HJ-104	M CAPACITOR	0.1μF,50V
	C106	QCXB1CN-472	CAPACITOR	0.0047μF,16V
	C107	QCF31HP-223	CAPACITOR	0.022μF,50V

– TERMINAL SECTION –

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q702	2SB810H,J	TRANSISTOR	

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	D701	1SS133	DIODE	
		or MA165	DIODE	
	D702	1SS133	DIODE	
		or MA165	DIODE	
	D705	1SS133	DIODE	
		or MA165	DIODE	
	R703	QRD161J-393	RESISTOR	39KΩ,1/6W
	R704	QRD161J-102	RESISTOR	1KΩ,1/6W
	L701	PU59152-100J	COIL	10μH
	L703	PU59152-100J	COIL	10μH
	J701	PEMC0766	RGB21PIN SOCKET	
	J703	PEMC0824	DIN CONNECTOR	

– ON SCREEN SECTION –

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC901	M50554-263SP	IC	
	IC902	M52684AP	IC	
	Q901	DTA114ES	TRANSISTOR	
	Q902	DTA114ES	TRANSISTOR	
	Q903	2SA933S(RS)	TRANSISTOR	
		or 2SA1267(YG)-TJK	TRANSISTOR	
	Q904	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(GB)-TJK	TRANSISTOR	
		or 2SC3311A(RS)	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
	R901	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R902	QRD161J-103	RESISTOR	10KΩ,1/6W
	R903	QRD162J-681	RESISTOR	680Ω,1/6W
	R904	QRD161J-103	RESISTOR	10KΩ,1/6W
	R905	QRD161J-102	RESISTOR	1KΩ,1/6W
	R906	QRD161J-471	RESISTOR	470Ω,1/6W
	R907	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R908	QRD161J-562	RESISTOR	5.6KΩ,1/6W
	R909	QRD161J-752	RESISTOR	7.5KΩ,1/6W
	R910	QRD161J-362	RESISTOR	3.6KΩ,1/6W
	R911	QRD161J-622	RESISTOR	6.2KΩ,1/6W
	R912	QRD161J-123	RESISTOR	12KΩ,1/6W
	R913	QRD161J-123	RESISTOR	12KΩ,1/6W
	R914	QRD161J-103	RESISTOR	10KΩ,1/6W
	R915	QRD161J-102	RESISTOR	1KΩ,1/6W
	R916	QRD161J-105	RESISTOR	1MΩ,1/6W
	R917	QRD161J-102	RESISTOR	1KΩ,1/6W
	R918	QRD161J-471	RESISTOR	470Ω,1/6W
	R919	QRD161J-472	RESISTOR	4.7KΩ,1/6W
	R920	QRD161J-152	RESISTOR	1.5KΩ,1/6W
	R921	QRD161J-271	RESISTOR	270Ω,1/6W
	R922	QRD161J-103	RESISTOR	10KΩ,1/6W
	R923	QRD161J-473	RESISTOR	47KΩ,1/6W
	R924	QRD161J-154	RESISTOR	150KΩ,1/6W
	R925	QRD161J-102	RESISTOR	1KΩ,1/6W
	R927	QRD161J-151	RESISTOR	150Ω,1/6W

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION	
	C903	QETC0JM-227	E CAPACITOR	220μF,6.3V
	C904	QCVC1CM-103	CAPACITOR	0.01μF,16V
	C905	QAT3120-450	TRIMMER CAPACITOR,DOT CLOCK	45pF
	C906	QCSB1HJ-220	CAPACITOR	22pF,50V
	C907	QCSB1HJ-330	CAPACITOR	33pF,50V
	C908	QCSB1HJ-360	CAPACITOR	36pF,50V
	C909	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C910	QCSB1HJ-270	CAPACITOR	27pF,50V
	C911	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C912	QCSB1HJ-270	CAPACITOR	27pF,50V
	C915	QCT25CH-150	CAPACITOR	15pF,50V
	C916	QAT3120-200	TRIMMER CAPACITOR,COLOR BURST	20pF
	C917	QCT25CH-5R0	CAPACITOR	5pF,50V
	C918	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C919	QETC0JM-227	E CAPACITOR	220μF,6.3V
	C920	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C921	QCBB1HJ-331	CAPACITOR	330pF,50V
	C922	QFN31HJ-222	M CAPACITOR	0.0022μF,50V
	C923	QER61HM-105	E CAPACITOR	1μF,50V
	C924	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C925	QCSB1HJ-220	CAPACITOR	22pF,50V
	C926	QETC1CM-106	E CAPACITOR	10μF,16V
	C927	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C928	QCXB1CN-152	CAPACITOR	0.0015μF,16V
	C931	QCSB1HJ-470	CAPACITOR	47pF,50V
	C932	QETC1HM-335	E CAPACITOR	3.3μF,50V
	L901	PU54223-101K	COIL	100μH
	L902	PU58333-220J	COIL	22μH
	L903	PU59152-8R2J	COIL	8.2μH
	L904	PU59152-150J	COIL	15μH
	L905	PU59152-220J	COIL	22μH
	L906	PU59152-220J	COIL	22μH
	L907	PU54223-101K	COIL	100μH
⚠	CF901	PU60086	RESONATOR	
⚠	X901	PU60908	CRYSTAL RESONATOR	
	CN901	PU60910-6	CONNECTOR	
⚠	CP802	ICP-F10	CIRCUIT PROTECTOR	

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VIDEO UNIT BOARD ASSEMBLY <05>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWBA	PB10554H	VIDEO UNIT BOARD ASSEMBLY
IC1	JCP0016-2	IC
IC2	TL8827P	IC
Q1	2SA1576(QRS)	TRANSISTOR
Q5	2SA1576(QRS)	TRANSISTOR
Q10	2SC4081(QRS)	TRANSISTOR
Q11	DTC144WU	TRANSISTOR
Q12	DTC144WU	TRANSISTOR
Q13	DTC144WU	TRANSISTOR
Q14	DTC144WU	TRANSISTOR
Q18	2SC4081(QRS)	TRANSISTOR
Q19	2SC4081(QRS)	TRANSISTOR
Q20	2SC4081(QRS)	TRANSISTOR
Q21	2SA1576(QRS)	TRANSISTOR
Q23	DTC144WU	TRANSISTOR
Q24	2SA1576(QRS)	TRANSISTOR
Q25	2SC4081(QRS)	TRANSISTOR
Q26	2SC4081(QRS)	TRANSISTOR
Q28	2SC4081(QRS)	TRANSISTOR
Q29	2SC4081(QRS)	TRANSISTOR
Q30	2SC4081(QRS)	TRANSISTOR
Q31	DTA124EU	TRANSISTOR
Q32	DTC144WU	TRANSISTOR
Q33	DTC114WU	TRANSISTOR
D1	1SS292Y	DIODE
D3	1SS133	DIODE
	or MA165	DIODE
D4	1SS133	DIODE
	or MA165	DIODE
D5	1SS133	DIODE
	or MA165	DIODE
D6	1SS133	DIODE
	or MA165	DIODE
D7	DAN202U	DIODE
D11	1SS133	DIODE
	or MA165	DIODE
D12	1SS133	DIODE
	or MA165	DIODE
D14	1SS133	DIODE
	or MA165	DIODE
D15	1SS133	DIODE
	or MA165	DIODE
D17	DAN202U	DIODE
D19	1SS133	DIODE
	or MA165	DIODE
D20	1SS133	DIODE
	or MA165	DIODE
D21	1SS133	DIODE
	or MA165	DIODE
D202	DAN202U	DIODE
R1	NRSA63J-681N	RESISTOR 680Ω,1/16W
	or NRSA63J-681NC	RESISTOR 680Ω,1/16W
R2	NRSA63J-475N	RESISTOR 4.7MΩ,1/16W
	or NRSA63J-475NC	RESISTOR 4.7MΩ,1/16W
R3	NRSA63J-475N	RESISTOR 4.7MΩ,1/16W
	or NRSA63J-475NC	RESISTOR 4.7MΩ,1/16W
R5	NRSA63J-103N	RESISTOR 10KΩ,1/16W
	or NRSA63J-103NC	RESISTOR 10KΩ,1/16W
R6	NRSA63J-361N	RESISTOR 360Ω,1/16W
	or NRSA63J-361NC	RESISTOR 360Ω,1/16W
R10	NRSA63J-102N	RESISTOR 1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR 1KΩ,1/16W
R11	NRSA63J-681N	RESISTOR 680Ω,1/16W
	or NRSA63J-681NC	RESISTOR 680Ω,1/16W
R12	ERS-L39J-102U	RESISTOR
R13	NRSA63J-102N	RESISTOR 1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR 1KΩ,1/16W
R16	NRSA63J-392N	RESISTOR 3.9KΩ,1/16W
	or NRSA63J-392NC	RESISTOR 3.9KΩ,1/16W
R17	NVP1301-222N	V.RESISTOR, PB Y LEVEL 2.2K 2.2KΩ
R18	NRSA63J-333N	RESISTOR 33KΩ,1/16W
	or NRSA63J-333NC	RESISTOR 33KΩ,1/16W
R19	NRSA63J-823N	RESISTOR 82KΩ,1/16W
	or NRSA63J-823NC	RESISTOR 82KΩ,1/16W
R21	NRSA63J-331N	RESISTOR 330Ω,1/16W
	or NRSA63J-331NC	RESISTOR 330Ω,1/16W
R22	NRSA63J-621N	RESISTOR 620Ω,1/16W
	or NRSA63J-621NC	RESISTOR 620Ω,1/16W
R23	NRSA63J-561N	RESISTOR 560Ω,1/16W
	or NRSA63J-561NC	RESISTOR 560Ω,1/16W
R24	NRSA63J-182N	RESISTOR 1.8KΩ,1/16W
	or NRSA63J-182NC	RESISTOR 1.8KΩ,1/16W
R25	NRSA63J-222N	RESISTOR 2.2KΩ,1/16W
	or NRSA63J-222NC	RESISTOR 2.2KΩ,1/16W
R26	NRSA63J-102N	RESISTOR 1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR 1KΩ,1/16W
R27	NRSA63J-183N	RESISTOR 18KΩ,1/16W
	or NRSA63J-183NC	RESISTOR 18KΩ,1/16W
R28	NRSA63J-822N	RESISTOR 8.2KΩ,1/16W
	or NRSA63J-822NC	RESISTOR 8.2KΩ,1/16W
R29	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
	or NRSA63J-562NC	RESISTOR 5.6KΩ,1/16W
R30	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
	or NRSA63J-562NC	RESISTOR 5.6KΩ,1/16W
R31	NRSA63J-183N	RESISTOR 18KΩ,1/16W
	or NRSA63J-183NC	RESISTOR 18KΩ,1/16W
R32	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
	or NRSA63J-562NC	RESISTOR 5.6KΩ,1/16W
R33	NRSA63J-562N	RESISTOR 5.6KΩ,1/16W
	or NRSA63J-562NC	RESISTOR 5.6KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R37	NRSA63J-162N	RESISTOR	1.6KΩ,1/16W
	or NRSA63J-162NC	RESISTOR	1.6KΩ,1/16W
R38	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
	or NRSA63J-332NC	RESISTOR	3.3KΩ,1/16W
R40	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R41	NVP1301-223N	V RESISTOR,CARRIER	22KΩ
R42	NVP1301-103N	V RESISTOR,DEVIATION	10KΩ
R43	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
	or NRSA63J-222NC	RESISTOR	2.2KΩ,1/16W
R44	NRSA63J-432N	RESISTOR	4.3KΩ,1/16W
	or NRSA63J-432NC	RESISTOR	4.3KΩ,1/16W
R45	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
	or NRSA63J-122NC	RESISTOR	1.2KΩ,1/16W
R46	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R47	NRSA63J-103N	RESISTOR	10KΩ,1/16W
	or NRSA63J-103NC	RESISTOR	10KΩ,1/16W
R48	NRSA63G-911N	RESISTOR	910Ω,1/16W
	or NRSA63G-911NC	RESISTOR	910Ω,1/16W
R49	NRSA63J-103N	RESISTOR	10KΩ,1/16W
	or NRSA63J-103NC	RESISTOR	10KΩ,1/16W
R51	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R52	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R53	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R54	NRSA63J-242N	RESISTOR	2.4KΩ,1/16W
	or NRSA63J-242NC	RESISTOR	2.4KΩ,1/16W
R55	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
	or NRSA63J-392NC	RESISTOR	3.9KΩ,1/16W
R56	NVP1301-152N	V RESISTOR,NC BALANCE	1.5KΩ
R57	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R58	NRSA63J-821N	RESISTOR	820Ω,1/16W
	or NRSA63J-821NC	RESISTOR	820Ω,1/16W
R59	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R60	NVP1301-103N	V RESISTOR,EE Y LEVEL	10KΩ
R61	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R62	NRSA63J-334N	RESISTOR	330KΩ,1/16W
	or NRSA63J-334NC	RESISTOR	330KΩ,1/16W
R64	NVP1301-332N	V.RESISTOR,WHITE CLIP	3.3KΩ
R65	NRSA63J-103N	RESISTOR	10KΩ,1/16W
	or NRSA63J-103NC	RESISTOR	10KΩ,1/16W
R66	NRSA63J-434N	RESISTOR	430KΩ,1/16W
	or NRSA63J-434NC	RESISTOR	430KΩ,1/16W
R67	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R68	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R69	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R70	NRSA63J-471N	RESISTOR	470Ω,1/16W
	or NRSA63J-471NC	RESISTOR	470Ω,1/16W
R71	NRSA63J-122N	RESISTOR	1.2KΩ,1/16W
	or NRSA63J-122NC	RESISTOR	1.2KΩ,1/16W

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
R72	NRSA63J-333N	RESISTOR	33KΩ,1/16W
	or NRSA63J-333NC	RESISTOR	33KΩ,1/16W
R73	NRSA63J-333N	RESISTOR	33KΩ,1/16W
	or NRSA63J-333NC	RESISTOR	33KΩ,1/16W
R74	NRSA63J-681N	RESISTOR	680Ω,1/16W
	or NRSA63J-681NC	RESISTOR	680Ω,1/16W
R75	NRSA63J-561N	RESISTOR	560Ω,1/16W
	or NRSA63J-561NC	RESISTOR	560Ω,1/16W
R76	NRSA63J-102N	RESISTOR	1KΩ,1/16W
	or NRSA63J-102NC	RESISTOR	1KΩ,1/16W
R77	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
	or NRSA63J-562NC	RESISTOR	5.6KΩ,1/16W
R78	NRSA63J-681N	RESISTOR	680Ω,1/16W
	or NRSA63J-681NC	RESISTOR	680Ω,1/16W
R79	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
	or NRSA63J-222NC	RESISTOR	2.2KΩ,1/16W
R81	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
	or NRSA63J-475NC	RESISTOR	4.7MΩ,1/16W
R83	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
	or NRSA63J-272NC	RESISTOR	2.7KΩ,1/16W
R84	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	or NRSA63J-105NC	RESISTOR	1MΩ,1/16W
R85	NRSA63J-155N	RESISTOR	1.5MΩ,1/16W
	or NRSA63J-155NC	RESISTOR	1.5MΩ,1/16W
R88	NRSA63J-101N	RESISTOR	100Ω,1/16W
R89	NRSA63J-561N	RESISTOR	560Ω,1/16W
R90	NRSA63J-562N	RESISTOR	5.6KΩ,1/16W
R208	NRSA63J-472N	RESISTOR	4.7KΩ,1/16W
	or NRSA63J-472NC	RESISTOR	4.7KΩ,1/16W
C1	NCS31HJ-221A	CAPACITOR	220pF,50V
C2	NCS31HJ-220A	CAPACITOR	22pF,50V
C4	NCS31HG-561A	CAPACITOR	560pF,50V
C8	QCFA1EZ-473	CAPACITOR	0.047μF,25V
C9	NCS31HJ-150A	CAPACITOR	15pF,50V
C11	NCS31HJ-680A	CAPACITOR	68pF,50V
C12	NCS31HJ-220A	CAPACITOR	22pF,50V
C13	NCS31HG-121A	CAPACITOR	120pF,50V
C14	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C17	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C18	NCS31HJ-820A	CAPACITOR	82pF,50V
C19	QETC1HM-474	E CAPACITOR	0.47μF,50V
C20	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C21	QETC1HM-474	E CAPACITOR	0.47μF,50V
C22	QETC1EM-475	E CAPACITOR	4.7μF,25V
C23	QETC1CM-106	E CAPACITOR	10μF,16V
C24	QEN61AM-226	NP E CAPACITOR	22μF,10V
	or QENC1AM-226	NP E CAPACITOR	22μF,10V
C25	QETC1CM-106	E CAPACITOR	10μF,16V
C26	PU57601-106MA	E CAPACITOR	10μF,25V
C27	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C29	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C30	QETC1HM-225	E CAPACITOR	2.2μF,50V
C31	QETC1HM-474	E CAPACITOR	0.47μF,50V
C32	NCS31HG-201A	CAPACITOR	200pF,50V
C33	NCB31EK-223A	CAPACITOR	0.022μF,25V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C34	QETC1EM-475	E CAPACITOR	4.7μF,25V
C35	NCS31HG-150A	CAPACITOR	15pF,50V
C36	QCF81CZ-105	CAPACITOR	1μF,16V
C37	NCB31EK-223A	CAPACITOR	0.022μF,25V
C38	NCS31HJ-101A	CAPACITOR	100pF,50V
C40	NCS31HJ-390A	CAPACITOR	39pF,50V
C41	NCB31CK-333A	CAPACITOR	0.033μF,16V
C42	QETC0JM-476	E CAPACITOR	47μF,6.3V
C43	QETC1CM-106	E CAPACITOR	10μF,16V
C44	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C45	QETC1CM-106	E CAPACITOR	10μF,16V
C46	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C47	QETC1HM-105	E CAPACITOR	1μF,50V
C48	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C49	NCB31HK-472A	CAPACITOR	0.0047μF,50V
C50	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C51	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C52	QETC1HM-105	E CAPACITOR	1μF,50V
C53	QETC1CM-106	E CAPACITOR	10μF,16V
C54	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C56	QEN61EM-475	NP E CAPACITOR	4.7μF,25V
	or QENC1EM-475	NP E CAPACITOR	4.7μF,25V
C57	QETC1EM-335	E CAPACITOR	3.3μF,25V
C58	QETC1EM-475	E CAPACITOR	4.7μF,25V
C59	NCF31CZ-473A	CAPACITOR	0.047μF,16V
C60	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C61	QETC1HM-474	E CAPACITOR	0.47μF,50V
C62	NCB31CK-333A	CAPACITOR	0.033μF,16V
C63	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C64	QETC1HM-104	E CAPACITOR	0.1μF,50V
C65	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C66	QETC1HM-104	E CAPACITOR	0.1μF,50V
C67	NCF31CZ-473A	CAPACITOR	0.047μF,16V
C69	NCB31HK-103A	CAPACITOR	0.01μF,50V
C71	NCB31HK-182A	CAPACITOR	0.0018μF,50V
C72	QETC1EM-475	E CAPACITOR	4.7μF,25V
C73	QETC1HM-105	E CAPACITOR	1μF,50V
C74	QETC0JM-107	E CAPACITOR	100μF,6.3V
C75	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C76	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C77	QETC1HM-104	E CAPACITOR	0.1μF,50V
C78	QCVB1CN-103	CAPACITOR	0.01μF,16V
C79	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C80	NCS31HJ-240A	CAPACITOR	24pF,50V
C82	QETC1HM-225	E CAPACITOR	2.2μF,50V
C84	NCS31HJ-180A	CAPACITOR	18pF,50V
C91	NCS31HJ-620A	CAPACITOR	62pF,50V
C93	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C96	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C97	NCB31CK-333A	CAPACITOR	0.033μF,16V
C98	NCB31HK-102A	CAPACITOR	0.001μF,50V
C99	NCS31HJ-180A	CAPACITOR	18pF,50V
C100	NCS31HG-361A	CAPACITOR	360pF,50V
C102	QCYA1EK-104	CAPACITOR	0.1μF,25V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
L1	PU58201-121J	COIL	120μH
L3	PU59152-330J	COIL	33μH
L4	PU59152-330J	COIL	33μH
L6	PU59152-820J	COIL	82μH
L7	PU59152-221J	COIL	220μH
L8	PU48530-101K	COIL	100μH
L9	PU48530-101K	COIL	100μH
L10	PU59152-680J	COIL	68μH
L11	PU48530-101K	COIL	100μH
L12	PU48530-101K	COIL	100μH
L13	PU48530-561J	COIL	560μH
L15	PU59152-150J	COIL	15μH
L16	PU59152-820J	COIL	82μH
LPF1	PELN0477	LOW PASS FILTER	
	or PELN0623	LOW PASS FILTER	
LPF2	PELN0478	LOW PASS FILTER	
	or PELN0621	LOW PASS FILTER	
LPF3	PU60128-2	LOW PASS FILTER	
	or PELN0622	LOW PASS FILTER	
DL1	PU60490-2	COMB FILTER	
	or PU60340-3	2H DELAY LINE	
	or PU58971-5	2H DELAY LINE	
	or PU60222-2	2H DELAY LINE	
⚠ X1	PEVB0386	CRYSTAL RESONATOR	
⚠	or PU60653-2	CRYSTAL RESONATOR	
SLD1	PQ45174	SHIELD PLATE	
SLD2	PQ45173-1-1	SHIELD CASE	
CN1	PEMC0712-114	PIN HEADER	
CN2	PEMC0712-113	PIN HEADER	
CN3	PEMC0712-113	PIN HEADER	

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TUNER UNIT BOARD ASSEMBLY <08>

PWBA	PB10522S	TUNER UNIT BOARD ASSY
⚠ TNR1	PERF0066	UHF/VHF TUNER
IC1	LA7577V	IC
Q1	2SB810H,J	TRANSISTOR
Q2	2SD1450S,T	TRANSISTOR

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
Q3	2SD1450S,T	TRANSISTOR	
Q4	2SD1819A(RS)	TRANSISTOR	
Q5	2SK381(C)	FE TRANSISTOR	
Q6	DTC114EU	TRANSISTOR	
Q15	2SD1819A(RS)	TRANSISTOR	
Q16	DTC144EU	TRANSISTOR	
Q17	2SD1819A(RS)	TRANSISTOR	
Q18	DTC144EU	TRANSISTOR	
Q19	2SD1819A(RS)	TRANSISTOR	
Q21	2SA1532(C)	TRANSISTOR	
D2	HZT33-02	ZENER DIODE	
D4	MTZ11B	ZENER DIODE	
R1	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R2	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R3	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
R13	NRSA63J-683N	RESISTOR	68KΩ,1/16W
R19	QRSA08J-183YN	RESISTOR	18KΩ,1/10W
R23	QRD161J-151	RESISTOR	150Ω,1/6W
R32	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R34	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R41	NRSA63J-102N	RESISTOR	1KΩ,1/16W
R45	NRSA63J-750N	RESISTOR	75Ω,1/16W
R51	QRD161J-331	RESISTOR	330Ω,1/6W
R52	NRSA63J-101N	RESISTOR	100Ω,1/16W
R54	NRSA63J-824N	RESISTOR	820KΩ,1/16W
R59	NRSA63J-151N	RESISTOR	150Ω,1/16W
R61	NRSA63J-151N	RESISTOR	150Ω,1/16W
R63	NRSA63J-162N	RESISTOR	1.6KΩ,1/16W
R65	NRSA63J-910N	RESISTOR	91Ω,1/16W
R66	NRSA63J-911N	RESISTOR	910Ω,1/16W
R67	NRSA63J-331N	RESISTOR	330Ω,1/16W
R69	NRSA63J-471N	RESISTOR	470Ω,1/16W
R71	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R72	QVZ3518-103	V RESISTOR,RF AGC ADJ	10KΩ
R74	NRSA63J-182N	RESISTOR	1.8KΩ,1/16W
R76	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R78	NRSA63J-332N	RESISTOR	3.3KΩ,1/16W
R79	NRSA63J-162N	RESISTOR	1.6KΩ,1/16W
R80	NRSA63J-103N	RESISTOR	10KΩ,1/16W
R81	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R82	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R83	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R84	NRSA63J-105N	RESISTOR	1MΩ,1/16W
R85	NRSA63J-623N	RESISTOR	62KΩ,1/16W
R86	NRSA63J-273N	RESISTOR	27KΩ,1/16W
R87	NRSA63J-681N	RESISTOR	680Ω,1/16W
R89	NRSA63J-471N	RESISTOR	470Ω,1/16W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R91	QRSA08J-184YN	RESISTOR	180KΩ,1/10W
R92	NRSA63J-223N	RESISTOR	22KΩ,1/16W
R93	NRSA63J-123N	RESISTOR	12KΩ,1/16W
R94	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R95	NRSA63J-272N	RESISTOR	2.7KΩ,1/16W
R96	NRSA63J-392N	RESISTOR	3.9KΩ,1/16W
R97	NRSA63J-822N	RESISTOR	8.2KΩ,1/16W
R105	NRSA63J-222N	RESISTOR	2.2KΩ,1/16W
R110	NRSA63J-153N	RESISTOR	15KΩ,1/16W
R113	QRSA08J-391YN	RESISTOR	390Ω,1/10W
C2	NCS31HJ-471A	CAPACITOR	470pF,50V
C3	QCBB1HK-102	CAPACITOR	0.001μF,50V
C5	QETF1CM-476	E CAPACITOR	47μF,16V
C6	NCB31HK-102A	CAPACITOR	0.001μF,50V
C8	QETF1HM-106	E CAPACITOR	10μF,50V
C12	QETF1CM-106	E CAPACITOR	10μF,16V
C16	QETF1HM-475	E CAPACITOR	4.7μF,50V
C20	QETF1CM-106	E CAPACITOR	10μF,16V
C34	NCT06CH-3R0A	CAPACITOR	3pF,50V
C35	NCT06CH-4R0A	CAPACITOR	4pF,50V
C37	NRSA63J-0R0N	RESISTOR	0Ω,1/16W
C39	NCT06CH-3R0A	CAPACITOR	3pF,50V
C41	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C42	QETF1CM-476	E CAPACITOR	47μF,16V
C43	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C44	QETF1CM-476	E CAPACITOR	47μF,16V
C47	QFN31HK-683	M CAPACITOR	0.068μF,50V
C48	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C50	QETF1HM-474	E CAPACITOR	0.47μF,50V
C51	NCS31HJ-750A	CAPACITOR	75pF,50V
C53	NCS31HJ-120A	CAPACITOR	12pF,50V
C55	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C56	QETC1CM-336	E CAPACITOR	33μF,16V
C58	QCYA1HK-103	CAPACITOR	0.01μF,50V
C59	NCT06CH-510A	CAPACITOR	51pF,50V
C60	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C61	NCS31HJ-331A	CAPACITOR	330pF,50V
C62	QETF1HM-224	E CAPACITOR	0.22μF,50V
C63	NCF31HZ-103A	CAPACITOR	0.01μF,50V
C66	NCB31HK-102A	CAPACITOR	0.001μF,50V
C67	QFV81HJ-473	TF CAPACITOR	0.047μF,50V
C68	QETF1HM-105	E CAPACITOR	1μF,50V
C69	NCB31HK-222A	CAPACITOR	0.0022μF,50V
C71	QETC1HM-104	E CAPACITOR	0.1μF,50V
C72	NCB31HK-472A	CAPACITOR	0.0047μF,50V
C91	NCT06CH-151A	CAPACITOR	150pF,50V
C92	QCTA1CH-1R0	CAPACITOR	1pF,16V
C93	NCT06CH-3R0A	CAPACITOR	3pF,50V
C94	NCT06CH-180A	CAPACITOR	18pF,50V
C100	NCF31HZ-103A	CAPACITOR	0.01μF,50V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C103	NCS31HJ-221A	CAPACITOR	220pF,50V
L2	PU60025-1R1	COIL	1.1µH
L3	PU60025-1R6	COIL	1.6µH
L5	PU60025-1R0	COIL	1µH
L6	PU59152-6R8J	COIL	6.8µH
L7	PU59152-6R8J	COIL	6.8µH
L8	PU59152-8R2J	COIL	8.2µH
L9	PU59152-120J	COIL	12µH
L10	PU59152-101J	COIL	100µH
L11	PU59152-220J	COIL	22µH
CF1	PU32990-2	CERAMIC FILTER	
CF2	PU60774-2	CERAMIC FILTER	
SAW1	PU35557-7	SAW FILTER	
T1	PELN0444	IF TRANSFORMER,VCO	
T3	PELN0442	COIL,FM DET	
T4	PELN0449	LC TRAP,TRAP	
SLD1	PQ33906-1-3	SHIELD PLATE	
CN1	PEMC0825-009	CONNECTOR(BOARD TO BOARD)	
CN2	PEMC0825-009	CONNECTOR(BOARD TO BOARD)	

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AUDIO CONTROL HEAD BOARD <12>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION
PWB1	PB40068	AUDIO CONTROL HEAD BOARD
CN1	PU59555-107	CONNECTOR

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TIMER/DISPLAY/SW BOARD ASSEMBLY <21>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA1	PB10666A1-01	TIMER/DISPLAY/SW BOARD ASSY	
IC1	UPD75217CW-153	IC	
IC2	S-8053HNB	IC	
IC101	GP1U541X	IR DETECT UNIT	
	or GP1U801X	IR DETECT UNIT	
Q1	2SC536SPA(FG)	TRANSISTOR	
	or 2SC1740S(RS)	TRANSISTOR	
	or 2SC3311A(RS)	TRANSISTOR	
D1	RD9.1ES-T1B2	ZENER DIODE	
D2	1SS133	DIODE	
D3	1SS133	DIODE	
D4	11ES2	DIODE	
D5	11ES2	DIODE	
D6	AU01	FR DIODE	
D7	1SS133	DIODE	
D8	RD5.6ES-T1B2	ZENER DIODE	
D9	1SS132	DIODE	
D10	1SS132	DIODE	
D14	1SS133	DIODE	
D15	1SS133	DIODE	
D101	SLH-34VC3F	LE DIODE,POWER	
D102	SLH-34MC3F	LE DIODE,AUTO TRACK	
D111	1SS132	DIODE	
D112	1SS132	DIODE	
D113	1SS132	DIODE	
D116	1SS132	DIODE	
D117	1SS132	DIODE	
D129	1SS132	DIODE	
R1	QRD161J-103	RESISTOR	10KΩ,1/6W
R2	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R3	QRD161J-273	RESISTOR	27KΩ,1/6W
R4	QRD161J-682	RESISTOR	6.8KΩ,1/6W
R5	QRD161J-333	RESISTOR	33KΩ,1/6W
R6	QRD161J-333	RESISTOR	33KΩ,1/6W
R7	QRD161J-102	RESISTOR	1KΩ,1/6W
R8	QRD161J-103	RESISTOR	10KΩ,1/6W
R9	QRD161J-103	RESISTOR	10KΩ,1/6W
R10	QRD161J-103	RESISTOR	10KΩ,1/6W
R11	QRD161J-103	RESISTOR	10KΩ,1/6W
R12	QRD161J-333	RESISTOR	33KΩ,1/6W
R13	QRD161J-271	RESISTOR	270Ω,1/6W
R14	QRD161J-271	RESISTOR	270Ω,1/6W
R15	QRD161J-103	RESISTOR	10KΩ,1/6W
R16	QRD161J-103	RESISTOR	10KΩ,1/6W
R17	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R18	QRD161J-333	RESISTOR	33KΩ,1/6W
R19	QRD161J-333	RESISTOR	33KΩ,1/6W
R20	QRD161J-333	RESISTOR	33KΩ,1/6W
R21	QRD161J-333	RESISTOR	33KΩ,1/6W
R22	QRD161J-103	RESISTOR	10KΩ,1/6W
R25	QRD161J-103	RESISTOR	10KΩ,1/6W
R26	QRD161J-103	RESISTOR	10KΩ,1/6W
R30	QRD161J-224	RESISTOR	220KΩ,1/6W
R31	QRD161J-151	RESISTOR	150Ω,1/6W
R32	QRD161J-271	RESISTOR	270Ω,1/6W
R33	QRD161J-271	RESISTOR	270Ω,1/6W

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
R34	QRD161J-333	RESISTOR	33KΩ,1/6W
R39	QRD161J-104	RESISTOR	100KΩ,1/6W
R40	QRD161J-271	RESISTOR	270Ω,1/6W
R41	QRD161J-103	RESISTOR	10KΩ,1/6W
R42	QRD161J-561	RESISTOR	560Ω,1/6W
R43	QRD161J-104	RESISTOR	100KΩ,1/6W
R44	QRD161J-104	RESISTOR	100KΩ,1/6W
R50	QRD161J-103	RESISTOR	10KΩ,1/6W
R51	QRD161J-103	RESISTOR	10KΩ,1/6W
R52	QRD161J-103	RESISTOR	10KΩ,1/6W
R53	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R54	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R55	QRD161J-472	RESISTOR	4.7KΩ,1/6W
R101	QRD161J-271	RESISTOR	270Ω,1/6W
R102	QRD161J-271	RESISTOR	270Ω,1/6W
RA1	QRB077J-104	RESISTOR ARRAY	100KΩ,7W
	or QRB079J-104	RESISTOR ARRAY	100KΩ,7W
C3	QCVB1CN-103	CAPACITOR	0.01μF,16V
C4	QER61CM-106	E CAPACITOR	10μF,16V
C5	PECA0810-105	E CAPACITOR	
	or QEA40HZ-105	E CAPACITOR (DOUBLE)	1F,5.5V
C6	QAT3120-200	TRIMMER CAPACITOR,TIMER CLOCK	20pF
C7	QCSB1HJ-120	CAPACITOR	12pF,50V
C11	QER61CM-106	E CAPACITOR	10μF,16V
C13	QCVB1CN-103	CAPACITOR	0.01μF,16V
C14	QER61HM-106	E CAPACITOR	10μF,50V
C17	QCF11HP-473	CAPACITOR	0.047μF,50V
C18	QER61CM-106	E CAPACITOR	10μF,16V
C19	QER61CM-106	E CAPACITOR	10μF,16V
C21	QCVB1CN-103	CAPACITOR	0.01μF,16V
C22	QCBB1HJ-151	CAPACITOR	150pF,50V
C30	QCBB1HJ-102	CAPACITOR	0.001μF,50V
C31	QCBB1HJ-151	CAPACITOR	150pF,50V
△ X1	PEVB0379	CRYSTAL RESONATOR	
△	or PU60226-4	CRYSTAL RESONATOR	
S1	PESW0525-Z	TACT SWITCH,POWER	
	or PU60392-1-2Z	TACT SWITCH	
	or PU60975-Z	TACT SWITCH	
S2	PESW0525-02Z	TACT SWITCH,STOP/EJECT	
	or PU60392-2-2	TACT SWITCH	
	or PU60975-2Z	TACT SWITCH	
S3	PESW0525-02Z	TACT SWITCH,FF/SEARCH +	
	or PU60392-2-2	TACT SWITCH	
	or PU60975-2Z	TACT SWITCH	
S4	PESW0525-02Z	TACT SWITCH,REW/SEARCH −	
	or PU60392-2-2	TACT SWITCH	
	or PU60975-2Z	TACT SWITCH	

#△ REF No.	PART No.	PART NAME, DESCRIPTION
S6	PESW0525-02Z	TACT SWITCH,REC/ITR
	or PU60392-2-2	TACT SWITCH
	or PU60975-2Z	TACT SWITCH
S7	PESW0525-02Z	TACT SWITCH,PLAY
	or PU60392-2-2	TACT SWITCH
	or PU60975-2Z	TACT SWITCH
S8	PESW0525-02Z	TACT SWITCH,PAUSE
	or PU60392-2-2	TACT SWITCH
	or PU60975-2Z	TACT SWITCH
S9	PESW0525-Z	TACT SWITCH,START +
	or PU60392-1-2Z	TACT SWITCH
	or PU60975-Z	TACT SWITCH
S10	PESW0525-Z	TACT SWITCH,START −
	or PU60392-1-2Z	TACT SWITCH
	or PU60975-Z	TACT SWITCH
S11	PESW0525-Z	TACT SWITCH,STOP +
	or PU60392-1-2Z	TACT SWITCH
	or PU60975-Z	TACT SWITCH
S12	PESW0525-Z	TACT SWITCH,STOP −
	or PU60392-1-2Z	TACT SWITCH
	or PU60975-Z	TACT SWITCH
S21	PESW0525-02Z	TACT SWITCH,CANCEL/SKIP/RESET
	or PU60392-2-2	TACT SWITCH
	or PU60975-2Z	TACT SWITCH
S24	PESW0525-02Z	TACT SWITCH,TIMER
	or PU60392-2-2	TACT SWITCH
	or PU60975-2Z	TACT SWITCH
S25	PESW0525-Z	TACT SWITCH,SET + /CH + /TRACK +
	or PU60392-1-2Z	TACT SWITCH
	or PU60975-Z	TACT SWITCH
S26	PESW0525-Z	TACT SWITCH,SET − /CH − /TRACK −
	or PU60392-1-2Z	TACT SWITCH
	or PU60975-Z	TACT SWITCH
S28	PESW0525-02Z	TACT SWITCH,DISP OFF
	or PU60392-2-2	TACT SWITCH
	or PU60975-2Z	TACT SWITCH
S405	PESW0550	SLIDE SWITCH,REPEAT
FDP1	PEDP0074	FLUORESCENT DISPLAY PANEL
K1	PU60281-4	FERRATE BEADS
HD1	PQ33662	FDP HOLDER(R)
HD2	PQ33661	FDP HOLDER(L)
HD3	PQM30038-2-2	LED HOLDER
HD4	PQM30039	LED SHADE
HD5	PQ45220	LED HOLDER
CN1	PU61044-4	CONNECTOR
	or PEMC0848-004	WIRE TRAP
CN2	PU61044-10	CONNECTOR
	or PEMC0848-010	WIRE TRAP
CN3	PU61044-6	WIRE TRAP
	or PEMC0848-006	WIRE TRAP
CN4	PU59555-7	CONNECTOR

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JACK BOARD ASSEMBLY <36>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA2	PB10666A2-01	JACK BOARD ASSY	
D201	1SS133	DIODE	
D202	1SS133	DIODE	
R201	QRD161J-750	RESISTOR	75Ω,1/6W
BKT1	PQ34330-1-1	BRACKET	
JA1	PEMC0921	PIN JACK(SW),FOR VIDEO	
JA2	PEMC0922	PIN JACK(SW),FOR AUDIO	
JA3	PU60664-8	MINI JACK,FOR PAUSE	
SCW1	SDST2606Z	SCREW,X2	
CN201	PU59555-4R	CONNECTOR	
CN202	PU59555-4	CONNECTOR	
CN203	PU59555-2	CONNECTOR	

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UPPER DRUM BOARD <41>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWB1	PDM3017	BOARD (UPPER DRUM)	

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PRE/REC AMP BOARD ASSEMBLY <43>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PB10482C	PRE/REC BOARD ASSY	
IC1	AN3386NK-A	IC	
Q1	2SA1576(QRS)	TRANSISTOR	
Q2	2SC4081(QRS)	TRANSISTOR	
Q3	2SC4081(QRS)	TRANSISTOR	
D1	1SS133	DIODE	
	or MA165	DIODE	
D2	1SS133	DIODE	
	or MA165	DIODE	
D3	1SS133	DIODE	
	or MA165	DIODE	
D4	1SS133	DIODE	
	or MA165	DIODE	
R1	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R2	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R3	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R4	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R5	QRSA08J-391YN	RESISTOR	390Ω,1/10W
R6	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R7	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R8	QRSA08J-222YN	RESISTOR	2.2KΩ,1/10W
R9	QRSA08J-821YN	RESISTOR	820Ω,1/10W
R10	QRSA08J-102YN	RESISTOR	1KΩ,1/10W
R11	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R12	QRSA08J-471YN	RESISTOR	470Ω,1/10W
R14	QRSA08J-122YN	RESISTOR	1.2KΩ,1/10W
R16	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R18	QRD161J-562	RESISTOR	5.6KΩ,1/6W
R19	QRSA08J-334YN	RESISTOR	330KΩ,1/10W
R20	QRSA08J-103YN	RESISTOR	10KΩ,1/10W
R21	QRD161J-393	RESISTOR	39KΩ,1/6W
R22	QRSA08J-153YN	RESISTOR	15KΩ,1/10W
R23	QRSA08F-363YN	RESISTOR	36KΩ,1/10W
	or NRVA62D-363N	RESISTOR	36KΩ,1/16W
R26	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R28	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R29	QRSA08J-271YN	RESISTOR	270Ω,1/10W
R30	QRSA08J-104YN	RESISTOR	100KΩ,1/10W
R31	QRD161J-154	RESISTOR	150KΩ,1/6W
C1	QER60JM-476	E CAPACITOR	47μF,6.3V
C2	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C3	QCSA1HJ-681	CAPACITOR	680pF,50V
C4	QCSB1HJ-150	CAPACITOR	15pF,50V
C5	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C6	QCSA1HJ-360	CAPACITOR	36pF,50V
C7	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C8	QCSA1HJ-680	CAPACITOR	68pF,50V
C9	QCSA1HJ-471	CAPACITOR	470pF,50V
C10	QCSA1HJ-180	CAPACITOR	18pF,50V
C11	QCSA1HJ-470	CAPACITOR	47pF,50V
C12	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C13	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C14	QCSA1HJ-391	CAPACITOR	390pF,50V
C15	QER61CM-476	E CAPACITOR	47μF,16V
C16	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C17	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C18	QCFA1EZ-104	CAPACITOR	0.1μF,25V
C19	QCSA1HJ-101	CAPACITOR	100pF,50V
C20	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C21	QCY81EK-104	CAPACITOR	0.1μF,25V

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
C23	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C24	QCFA1HZ-103	CAPACITOR	0.01μF,50V
C25	QCSA1HJ-101	CAPACITOR	100pF,50V
C26	QCSA1HJ-101	CAPACITOR	100pF,50V
C27	QCY81EK-104	CAPACITOR	0.1μF,25V
C28	QCY81EK-104	CAPACITOR	0.1μF,25V
C29	QER61AM-685	E CAPACITOR	6.8μF,10V
C30	QCF81EZ-224	CAPACITOR	0.22μF,25V
C31	QCFA1HZ-103	CAPACITOR	0.01μF,50V
L1	PU54223-101K	COIL	100μH
L2	PU59988-560J	COIL	56μH
L3	PU59988-220JY	COIL	22μH
L4	PU59988-470J	COIL	47μH
L5	PU59988-470J	COIL	47μH
L6	PU59988-121JY	COIL	120μH
L7	PU59988-330J	COIL	33μH
L8	PU54223-470K	COIL	47μH
SLD1	PQ32216-1-1	SHIELD CASE(1)	
CN1	PU58844-106	CONNECTOR	
CN2	PU59555-107	CONNECTOR	
CN3	PU59974-8	CONNECTOR	

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DECK TERMINAL BOARD ASSEMBLY <51>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA	PB10481B-01	DECK TERMINAL BOARD ASSEMBLY	
Q1	PU60625	END SENSOR	
R1	QRD161J-202	RESISTOR	2KΩ,1/6W
R3	QRD161J-331	RESISTOR	330Ω,1/6W
R4	QRD161J-331	RESISTOR	330Ω,1/6W
R5	QRD161J-331	RESISTOR	330Ω,1/6W
R7	QRD161J-202	RESISTOR	2KΩ,1/6W
R8	NTH5D473KB	THERMISTOR	
	or ERT-D2ZHK473S	NEGA THERMISTOR	
	or NTH5D473KA	RESISTOR	
C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
PS1	PS5705HR	PH INTERRUPTER	
PS2	PS5705HR	PH INTERRUPTER	
CN1	PEMC0722-017	WIRE TRAP	
	or PEMC0753-017	WIRE TRAP	

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
CN2	PU60642	CONNECTOR(7PIN)	
CN3	PU60640	CONNECTOR(4PIN)	

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LOADING MDA BOARD ASSEMBLY <55>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWBA2	PB10481B2-01	LOADING MDA BOARD ASSY	
⚠ IC1	BA6418N	IC	
⚠	or XRA6418N	IC	
C1	QETA1CM-336	E CAPACITOR	33μF,16V
CN1	PU59555-104	CAP HOUSING	

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CASSETTE HOUSING BOARD <56>

#⚠ REF No.	PART No.	PART NAME, DESCRIPTION	
PWB1	PB40061	CASSETTE HOUSING BOARD	
Q2	PN268VI	PHOTO TRANSISTOR	
D1	UZ5.1BSB	ZENER DIODE	
	or RD5.1ESB2	ZENER DIODE	
R1	QRD162J-473	RESISTOR	47KΩ,1/6W
R2	QRD182J-681	RESISTOR	680Ω,1/8W
R3	QRD122J-102S	RESISTOR	1KΩ,1/2W
C1	QCC11EJ-103	CAPACITOR	0.01μF,25V
PHS3	PU60629	CASSETTE SENSOR	
TH1	ERT-D2FHJ503S	THERMISTOR	
	or ERT-D2FHK503S	THERMISTOR	
	or PESC1084	NEGA THERMISTOR	
CN2	PU60639	4PIN SOCKET	

SECTION 6
TECHNICAL INFORMATIONS

6.1 CPU pin functions

1. Mechacon CPU pin function (IC601)

Pin No.	Symbol	I/O format	Label	IN/OUT	Contents
1	Vcc	—	Vcc	—	For the SYSTEM CONTROL, DC 5V (AL 5V)
2	VREF	—	Vref		
3	DA	Analog	START SENS	I	LEADER TAPE DETECT (DET ON: L)
4	PWM	PWM	NC	—	NC
5	Port 6 4	N-ch OPEN DRAIN	AVG FM	I	AUTO TRACKING DATA IN
6	3		THERM		THERMIC CORRECTION (CAPSTAN BRAKE TIMING CONTROL)
7	2		MODE SENS A		MECHANISM MODE DETECT
8	1		MODE SENS B		
9	0		MODE SENS C		
10	AN 7	Analog	REC SAFETY		DETECTS ERASE PROTECT TAB (TAB ABSENT: H)
11	6		END SENS		TRAILER TAPE DETECT (DET ON: L)
12	5		PICTURE	—	NOT USED
13	4		CAP DRIVE	O	CAPSTAN MOTOR DRIVE VOLTAGE SERVO
14	Port 4 3	N-ch OPEN DRAIN	DRUM DRIVE	O	DRUM MOTOR DRIVE VOLTAGE SERVO
15	2		LCM 2	O	LOADING MOTOR CONTROL
16	1		SYNC DET	I	INPUT SIGNAL DETECT (NO SYNC: L)
17	0		DRUM FF	I	REC TIMING CONTROL, DRUM ROTATION DETECT (25 Hz)
18	Port 3 7	N-ch OPEN DRAIN	CTL PULSE	I	MODE DETECT (SP/LP), BLANK DETECT
19	6		CAP REV	O	CAPSTAN ROTATION CONTROL (REV: L)
20	5		V. PULSE	O	V PULSE CONTROL
21	4		HEAD SELECT	O	HEAD SELECT SIGNAL OUTPUT
22	3		NC	—	NC
23	2		REEL FG (SUP)	I	REEL ROTATION DETECT/TAPE REMAIN
24	1		REEL FG (TU)	I	
25	0		LCM1	O	LOADING MOTOR CONTROL
26	$\overline{\text{INT-1}}$	—	CAP FG	I	MODE (SP/LP) DETECT/BACK SPACE COUNT
27	CN Vss		CN Vss		GND
28	$\overline{\text{RESET}}$		RESET		RESET AT CONNECT VCR TO AC
29	X IN		X IN	I	MAIN SYSTEM CLOCK
30	X OUT		X OUT	O	
31	ø		NC	—	NC
32	Vss		Vss	—	GND
33	Port 5 7	with Input Latch	R PAUSE	I	REMOTE PAUSE CONTROL (PAUSE ON: L)
34	6		INDEX	I/O	VISS DATA WRITE/DETECT
35	5		S. CLK	O	CLOCK
36	4		S. DATA	O	SERVO CONTROL DATA OUTPUT
37	3	High Impedance	RENT	O	RENTAL MODE: L
38	2		TEXT		TEXT MODE: L
39	1		VIDEO MUTE	O	PICTURE MUTE CONTROL (MUTE ON: H)
40	0		EDIT	O	EDIT MODE: L
41	Port 1 7	N-ch OPEN DRAIN	REC START	O	REC START: L
42			SP		SP MODE: L
43	5		AUX		INPUT SIGNAL CONTROL (AUX: L)
44	4		REC		REC: L
45	3		P MUTE		PICTURE MUTE CONTROL (MUTE ON: L)
46	2		EE		EE: L
47	1		POWER ON		POWER ON: L
48	0		VIDEO		VIDEO MODE: L
49	Port 0 7	N-ch OPEN DRAIN	A. MUTE	O	AUDIO MUTE CONTROL (MUTE ON: H)
50	6		CASS SENS	I	CASSETTE IN/OUT DETECT
51	5		M DATA	I/O	MEMORY IC CONTROL (DATA READ/WRITE)
52	4		TNR CTL	O	TNR MODE: H
53	3		V. UP	O	CAPSTAN ROTATION SPEED CONTROL (V. UP: H)
54	2		AUTO/MAN/SLOW	O	HEAD SELECT
55	1		NC	—	NC
56	0		M CE	O	MEMORY IC CHIP ENABLE
57	Port 2	C MOS	NC	-	NC
58	6		NC	-	NC
59	5		PLL DATA	O	TUNING DATA OUTPUT
60	4		PAUSE	O	CAPSTAN MOTOR SERVO (SERVO MODE: H)
61	3		SERVO		
62	2		TM CLK	I	CLOCK
63	1		TM DATA	I/O	M-CTL/TIMER CPU BUS DATA (16 BIT SERIAL)
64	0		PLL LOCK	I	TUNING CHECK DATA INPUT

Table 6-1 Mechacon CPU pin function

2. IC1 pin function (Timer)

Pin No.	Symbol	Label	I/O	Contents
1	S3	Sd	O	SEGMENT DISPLAY DATA OUTPUT
2	S2	Sc		/KEY SCAN PULSE OUTPUT
3	S1	Sb		/KEY SCAN PULSE OUTPUT
4	S0	Sa		/KEY SCAN PULSE OUTPUT
5	P00/INT4	POWER DOWN	I	POWER DOWN DETECT (P DOWN: L)
6	P01/SCK	OS CLK	O	ON SCREEN DATA TRANSFER CLOCK
7	P02/SD	OS DATA		ON SCREEN DATA OUTPUT
8	P03/SI	TEST	I	TEST POINT
9	P10/INT0	REMOTE	I	16 bit REMOTE DATA INPUT (A/B CODE)
10	P11/INT1	NC	–	NC
11	P12/INT2	CTL CLOCK	O	COUNTER DATA INPUT
12	P13/T10	CTL CLOCK		
13	P20	KS0	I	KEY SCAN DATA INPUT
14	P21	KS1		
15	P22	KS2		
16	P23/BUZ	KS3		
17	P30	TM DATA	I/O	TM (TIMER/M-CTL CPU) BUS : 16 bit SERIAL DATA
18	P31	TM CLK	I	: CLOCK
19	P32	SDA	I/O	VIDEO PROGRAMMING SYSTEM : I^2 C BUS DATA
20	P33	SCL	O	: CLOCK
21	P60	JS/B	I	JOG PULSE INPUT
22	P61	SHUTTLE	I	SHUTTLE SW (ON: H)
23	P62	JS/A	I	JOG PULSE INPUT
24	P63	OS CE	O	ON SCREEN IC CHIP ENABLE LINE
25	P40	OS RESET		ON SCREEN IC RESET CONTROL
26	P41	NC	–	NC
27	R42	NC		
28	P43	NC		
29	PPO	NC		
30	X1	X1	I	MAIN SYSTEM CLOCK
31	X2	X2	O	
32	Vss	Vss	–	GND
33	XT1	XT1	I	
34	XT2	NC	–	NC
35	P50	POWER	O	LED CONTROL (LED ON: L)
36	P51	AUTO TRACK	O	LED CONTROL (LED ON: L)
37	P52	NC	–	NC
38	P53	PROGRAM	O	BLUE BACK MODE: H
39	RESET	RESET	I	RESET AT CONNECT VCR TO AC
40	T0	10G	O	COLUMN DISPLAY DATA OUTPUT
41	T1	9G		
42	T2	8G		
43	T3	7G		
44	T4	6G		
45	T5	5G		
46	T6	4G		
47	T7	3G		
48	T8	2G		
49	T9	1G		
50	T10/S15/PH3	Sp	O	SEGMENT DISPLAY DATA OUTPUT /KEY SCAN PULSE OUTPUT
51	T11/S14/PH2	So		
52	T12/S13/PH1	Sn		
53	T13/S12/PH0	Sm		
54	T14/S11	Sl		
55	T15/S10	Sk		
56	VLOAD	VLOAD	I	FDP DRIVE
57	VPRE	VPRE		
58	S9	Sj	O	SEGMENT DISPLAY DATA OUTPUT
59	S8	Si		
60	S7	Sh		
61	S6	Sg		
62	S6	Sf		/KEY SCAN PULSE OUTPUT
63	S4	Se		/KEY SCAN PULSE OUTPUT
64	VDD	VDD	–	5 V For the SYSTEM CONTROL

Table 6-2 IC1 pin function

E. & O. E. No. 82299